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The ALP 1981-86 Timber Sale Operating Plan

Draft Environmental Impact Statement for the Chatham and Stikine Areas Of the Tongass National Forest with Alaska Lumber and Pulp Company

Part 1



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DRAFT ENVIRONMENTAL IMPACT STATEMENT

1981-86 Alaska Lumber and Pulp Company
Timber Operating Plan for the Chatham and Stikine Areas
of the Tongass National Forest
Southeast Alaska

Type of action:	Administrative
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Responsible Official:	R. Max Peterson Chief, Forest Service U.S. Department of Agriculture Washington, D.C. 20250
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ABSTRACT

This draft Environmental Impact Statement describes a recommended plan for the harvest of 525 MMbm of timber from the Chatham and Stikine Areas of the Tongass National Forest under the long term timber sale contract with Alaska Lumber and Pulp Company. The operating period for proposed harvest is 1981-86. This statement also describes eight alternatives from which the Recommended Action was developed. The process used to develop these alternatives and the Recommended Action is also discussed.

The period for public review of this Statement is September 1 through December 1, 1979. A final decision concerning this action plan will be filed with the Environmental Protection Agency on March 1, 1980. The earliest date of activity under the final plan will be May 1, 1980.

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Summary

This is a draft environmental statement published by the U.S. Department of Agriculture's Forest Service. It describes an administrative type of action.

The purpose of this statement is to display the development of a recommended action plan for the harvesting of 525 million board feet measure (MM bm) of timber from Kuiu, Baranof, and Chichagof Islands of the Tongass National Forest in Alaska during the 1981-86 operating period. Timber harvesting and related activities are authorized by an existing long-term timber sale contract between USDA Forest Service and Alaska Lumber and Pulp Company, Inc. Major issues are addressed and incorporated in developing the proposed plan. Issues pertain to the management of timber, fish, wildlife, soil, water, cultural, visual and recreational resources, and to socioeconomic needs.

Eight alternatives were developed for timber harvest in eight Management Areas:

Alternatives 1-3: Developed by the Chatham Area Interdisciplinary Team (IDT), these alternatives provide for harvest, with varying degrees of resource protection and levels of public investment, of 395 MM bm. Management Areas proposed for entry are: Whitestone Harbor, Freshwater Bay, Corner Bay, Kelp Bay, Crab Bay, Tenakee Inlet, and Kadashan.

Alternatives 4-7: Developed by the Stikine Area Interdisciplinary Team, these alternatives provide for harvest of 130 MM bm, with varying patterns of cutting units, roads, and related development. Harvest is proposed within the East Kuiu Management Area.

Alternative 8: Developed by Alaska Lumber and Pulp, this alternative provides for harvest of 554 MM bm from Whitestone Harbor, Freshwater Bay, Tenakee Inlet, Kadashan, Trap Bay, and East Kuiu Management Areas.

The Proposed Action was derived by the two IDTs by combining elements of each of these eight alternatives on an area-by-area basis to provide the 525 MM bm required for the operating period. This process (described fully in section III) permitted maximum flexibility through which interdisciplinary planning could achieve a blend of economic, environmental, and social management objectives. Description of the Proposed Action details those elements of Alternatives 1-8 which were selected

for a recommended harvest plan in the eight Management Areas.

Organizations, communities, and agencies which have been regularly informed of this planning process are identified in the following lists. A number of these groups have actively participated by providing comments and recommendations to the IDT.

Groups and Organizations

Environmental Groups:

Sierra Club
National Audubon Society
Southeast Alaska Conservation Council
Lynn Canal Conservation Society
Friends of the Earth
Alaska Conservation Society
Tongass Conservation Society
Friends of Tenakee

Fisheries Groups:

Northern Southeast Aquaculture Assoc.
United Fishermen of Alaska
Alaska Trollers Association

Industrial Groups:

Citizens for Management of Alaska Lands
Alaska Miners' Association
Sitka Visitor's Bureau
Alaska Lumber and Pulp
Alaska Logger's Association
Glacier Guides, Inc.
Prewitt Enterprises
Larrabee Logging
Clear Creek Logging
Western Forest Industries Association
Ketchikan Pulp Company
Alaska Lumberman's Association
Alaska Mineral Association
Mud Bay Logging
Citie Service Minerals Corporation
Eagle Air, Inc.
Channel Flying
American Mining Congress

Wildlife and Sports Groups:

Territorial Sportsmen
Alaska Wildlife Federation
Sitka Sportsmen's Association

Federation of Western Outdoor Clubs
Alaska Discovery

U.S. Coast Guard, Office of Marine Environment
Federal Highway Administration

Native Organizations and Corporations:

Alaska Native Brotherhood
Sealaska
Shee Atika
Huna Totem
Kootznووoo
Goldbelt
Chugach Natives
Shaan-Seet
Yak-Tat-Kwaan
Klawock Heenya
Klukwan
Kavilco
Natives of Afognak
Haida Corporation

State of Alaska:

Dept. of Commerce and Economic
Development
Dept. of Community and Regional
Affairs
Dept. of Environmental Conservation
Dept. of Fish and Game
Dept. of Natural Resources
Dept. of Transportation and Public
Facilities
University of Alaska
Division of Policy Planning and
Development
Office of Coastal Management
Historic Preservation Officer

Communities

Angoon
Elfin Cove
Pelican
Tenakee Springs
Hoonah
Mt. Bether
Gustavus
Point Baker/Port Protection
Port Alexander
Haines
Skagway
Juneau
Petersburg
Wrangell
Kake
Sitka
Yakutat

Other Agencies

Federal:

National Marine Fisheries Service
U.S. Fish and Wildlife Service
Federal Energy Administration
Department of HEW, Regional
Environmental Office
U.S. Army Corps of Engineers
Bureau of Mines
Advisory Council on Historic Preservation
Environmental Protection Agency
Dept. of Housing and Urban Development

Response Form



YOUR NAME, ADDRESS, AND ZIPCODE:

2. ALTERNATIVES AND RECOMMENDED ACTION. The Team's recommendation is a blend of eight alternatives. We would like to know your thoughts on these alternatives, the recommendation, and the process used to develop them. If your concerns are best met by one of the alternatives, please identify it.

Dear Reviewer:

YOUR RESPONSE BY DECEMBER 1 will be used in preparing a final environmental impact statement for the 1981-86 ALP operating period. You may use this form, or you may enclose a letter inside this form. When finished with your comments, just detach this page. Fold it in half with the other side facing out. Seal the edges. And, mail it so it will arrive by December 1. This form is preaddressed, and the postage is prepaid.

Some topics you may wish to discuss with us are:

1. THE ISSUES. Please tell us which issues you consider most important to this planning process. If these issues are not adequately addressed in this statement, please identify those additional questions or concerns which the Team should consider.

3. OTHER COMMENTS. Your comments on all aspects of this plan will assist us in reaching a good decision.

You may wish to discuss:

- * Areas proposed for harvest.
- * Resource protection measures.
- * Harvest systems proposed.
- * Public involvement.
- * Other issues and topics.
- * Transportation plan.
- * Community impacts.
- * Economic issues.
- * Decision criteria.

4. MORE INFORMATION. Detailed reports prepared by resource specialists have been summarized in this statement. A number of these reports are identified in the document. If you would like to receive a copy of any of these reports or other additional information, please identify what you need:

U.S. Department of Agriculture
Forest Service, Alaska Region
Office of Information
P.O. Box 1628
Juneau, Alaska 99802

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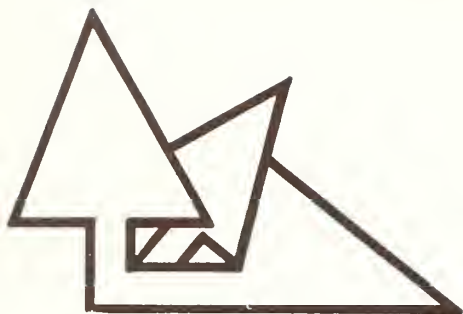


FIRST CLASS

USDA Forest Service
Tongass NF-Chatham Area
P.O. Box 1980
Sitka, Alaska 99835

**I.
Introduction
to the Proposals
and Related Issues**





Background Information

Long Term Timber Sale Contract

The 50-year contract with Alaska Lumber and Pulp Company (ALP) is one of three long-term timber sale contracts on the Tongass National Forest. The contract was initiated on January 25, 1956. Contract operations began July 1, 1961, and will expire on June 30, 2011. The primary sale area includes Baranof Island and parts of Chichagof Island. Two contingency areas, Kuiu Island and northeast Chichagof Island, are provided.

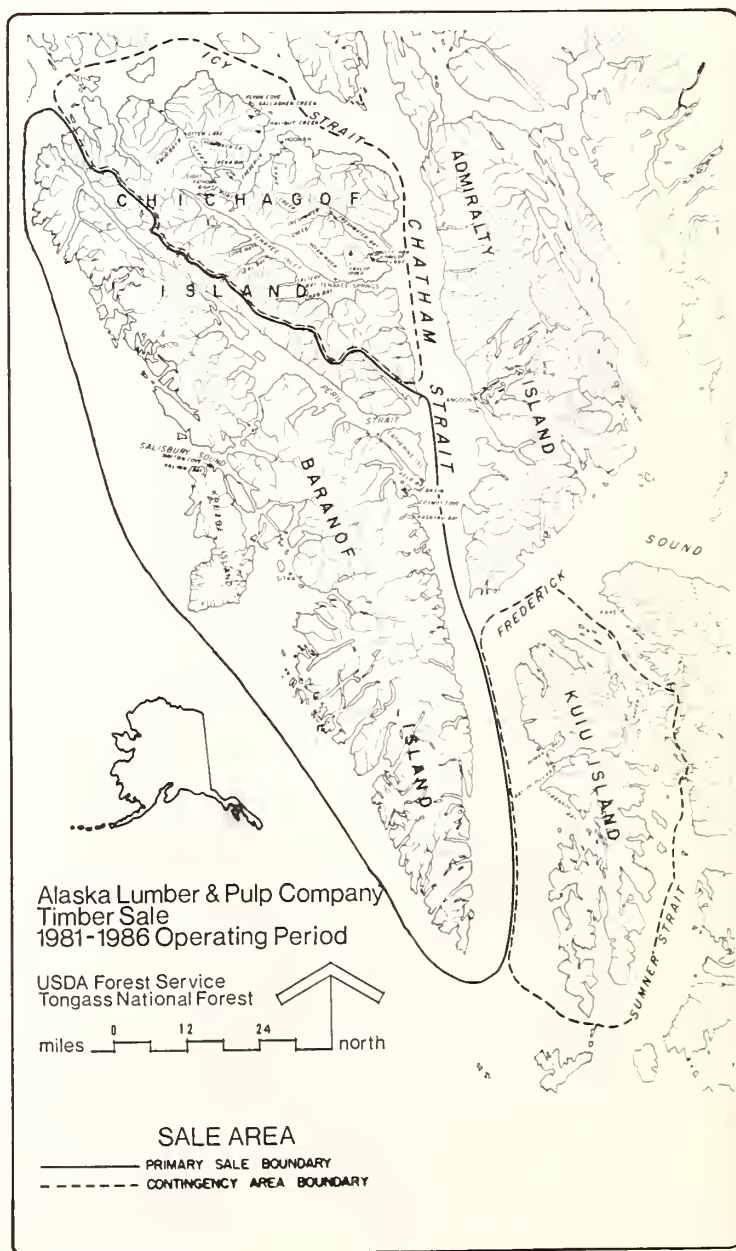
The contingency areas are available for timber harvest if sufficient volume to meet the terms of the contract is not available from the primary areas. In 1973, timber harvest was begun in the contingency areas as a result of the decision to suspend operations on West Chichagof-Yakobi Islands. Subsequently, the Tongass Land Management Plan proposed roadless management for portions of the sale area, including recommended wilderness classification for West Chichagof-Yakobi and for south Baranof Island. Consequently, by agreement between the Forest Service and the purchaser, logging operations are proposed to continue in the contingency areas as well as in those portions of the primary sale area allocated for developmental activities (Land Use Designation III or IV) by the Tongass Land Management Plan.

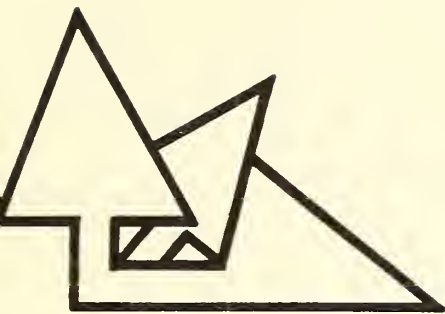
Objectives of 1981-86 Environmental Study

(1) Section 5b of the ALP contract specifies that:

After an initial period ending June 30, 1971, operations under this contract shall be divided into operating periods of five (5) years, beginning July 1, 1971, and at five-year intervals thereafter: Provided, that the five year operating periods will be changed to begin on January 1, 1981. For each operating period, logging units will be selected within the area included in this contract, main roads will be specified, stumpage rates will be redetermined in accordance with Section 2d, and modification of this contract in accordance with Section 2f may be made, all in accordance with the terms and conditions herein stated.

One objective of the planning process documented in this draft environmental statement is to meet this requirement of the contract.





(2) Actions to be taken under this proposal are regulated by more than 140 Federal laws defining Forest Service authorities. 1/ A second objective of this study is to evaluate and to prescribe management principles as necessary to meet these laws.

(3) Management of public lands is intended, as well, to address and to resolve the concerns of the public to the greatest extent possible. Since some of the areas proposed for harvest are adjacent to lands selected by Native village and regional corporations and by the State of Alaska, this planning objective has assumed a major role in the 1981-86 study. Some areas have well-established traditional uses by regional populations. Other areas offer potential for economic stability to adjacent communities. This draft environmental statement documents steps taken to meet the objective of close cooperative planning with the public.

Relationship to Other Land Planning Processes

In addition to national planning direction, as established by the Renewable Resources Planning Act (RPA) and other major legislation, two regional planning documents are of major importance to the 1981-86 study process. These are the Southeast Alaska Area Guide and the Tongass Land Management Plan.

Southeast Alaska Area Guide. The Guide was published in April, 1977, as a two-part document. Part A provides planning and management direction for the Tongass. Part B was a draft environmental statement on proposed resource allocation--a study which was finalized through the Tongass Land Management Plan.

At the time the Guide was published, it was agreed that its policies would be field tested for one year and the Guide subsequently revised to reflect any adjustments necessary to meet field conditions. This update has been delayed while regulations in response to the National Forest Management Act were developed. These regulations now direct that a Regional Plan be developed to provide resource management policies and guidelines. This Regional Plan will be prepared during 1979-80 and will constitute the Area Guide update.

1/ The Southeast Alaska Area Guide discusses the management requirements of the major laws which direct Forest Service activities.

The 1981-86 ALP study has been conducted within direction of the Area Guide, including:

- * Direction for agency planning such as interdisciplinary study, public involvement, and coordinated interagency planning.
- * Assumptions, issues, goals, and policies for management of each of the resources, including soil, water, fish, wildlife, estuaries and wetlands, timber, minerals and fossil fuels, recreation, wilderness, and cultural resources.
- * Assumptions, issues, goals, and policies for administrative and support activities on the Tongass, including transportation planning; land occupancy and ownership; forest insect and disease management and pesticide use; and public safety and protection.

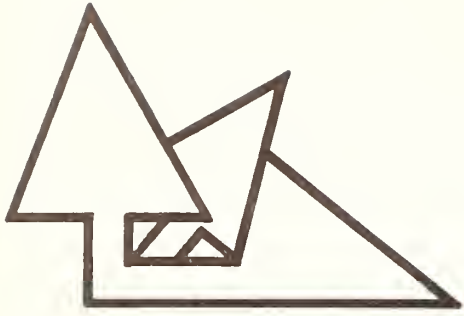
Tongass Land Management Plan. Filed with the Environmental Protection Agency in March, the Tongass Land Management Plan (TLMP) became effective April 15, 1979. This plan responded to national direction that forest plans be developed to provide comprehensive management over an extended time period. TLMP establishes multiple use allocation for the Tongass National Forest for the next 10 years.

Development of the 1981-86 operating plan was conducted within the constraints of Tongass Land Management Plan (TLMP) allocation as follows:

The Tongass National Forest includes 15.1 million acres. Of this total, 6.9 million acres are included on the Chatham Area and 3.1 on the Stikine Area. Of these total Areas, TLMP allocated 60 percent of the Chatham to Land Use Designations I and II, and 37 percent of the Stikine to LUDs I and II. These designations preclude timber harvest.

The remaining land base was further reduced through withdrawals by the Secretary of Agriculture; through pending land claims by the State of Alaska and by Native corporations under the Alaska Native Claims Settlement Act. These reductions total 666,688 acres on the Chatham and 169,451 on the Stikine.

Of the 1,770,554 acres of operable Commercial Forest Land on the Chatham and Stikine, 949,230 acres are allocated to LUD III and IV and are available presently for harvest consideration, although only a portion is within the ALP sale area. Therefore, alternatives and the recommended action were developed through examination of a land base limited by resource



protection allocation, land claims, designation for non-commercial purposes, and sale boundaries.

The 1981-86 ALP study has been conducted within direction of TLMP, as follows:

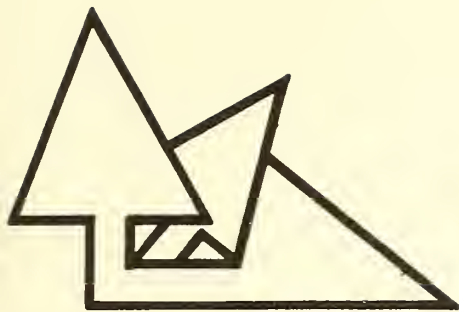
- * Land Use Designations (LUDs) for all land units within the ALP sale area. Areas recommended for 1981-86 harvest are allocated as LUD III or LUD IV, both permitting timber harvest and roads.

- * Wilderness recommendation for portions of the ALP primary sale area and roadless management (LUD II) allocation in other areas. This necessitates continuing use of contingency sale areas on northeast Chichagof and on Kuiu.

- * Extensive resource inventory data, socioeconomic information, and public comment. Assumptions, assessments, and conclusions reached by the team preparing the 1981-86 ALP operating plan are related closely to data presented in the TLMP Task Force Working Reports and final environmental statement.

- * Established management areas. These clusters of adjacent land units with similar allocation and management emphasis promote planning for all resources over time. The 1981-86 study includes seven management areas on the Chatham Administrative Area and one management area on the Stikine portion of the Tongass. Once the decision is reached on the final EIS for this operating plan, the decision and associated information will be used to update the Tongass Land Management Plan for those management areas affected. This will include refinements and additions to the management emphasis statement, activity list and output targets, and added standards and guidelines to be followed (see "Appendix").

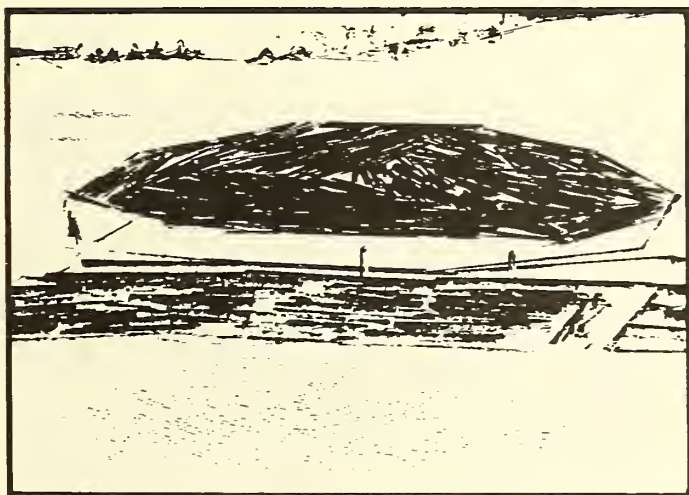


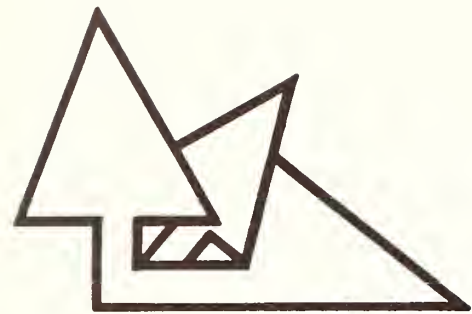


Current Proposals

The total timber included in the ALP long term timber sale contract is 4,494,700 Mbm. Under the timber sale contract, ALP can cut up to a total volume at any given year that does not exceed the cumulative of 104,232 Mbm annually, beginning on July 1, 1961. The total volume that may be cut as of January 1, 1986, is 2,032,524 Mbm (104,232 Mbm x 19.5 years). The volume that will be included in the rate redetermination for the 1981-86 period will be the difference between the maximum permissible under the contract for 1986 (2,032,524 Mbm) and the most current estimate of the volume which will be cut as of January 1, 1981. Another way to calculate this volume is to add the five-year cut of 521,160 Mbm (104,232 Mbm x 5 years) to the carry-over volume from the 1976-81 period.

The total volume to be included in this rate redetermination is, in part, dependent upon estimates of what that carry-over volume will actually be on January 1, 1981. Estimates will be made at different times, one for the environmental impact statement and, later, for the redetermination appraisal. Thus, there could be a variation in the volumes and that variation can be attributed to the carry-over volume estimate.





Major Issues and Concerns

Extensive public involvement has identified some of the major issues and concerns of affected communities, interest groups, and other government agencies. In addition to contacts made by the 1981-86 study team, public comments received during earlier planning processes (such as the Area Guide and TLMP studies) have been reviewed. The study team concluded that most identified issues have, in some form, been of concern to earlier planning efforts as well. With an allocation decision reached in TLMP, it is anticipated that some issues may have been resolved.

1. Protection or enhancement of natural resources within timber harvest areas is of continuing concern to the public and to land managers. Management emphasis assigned by TLMP allocation, along with direction for sustained timber harvest and employment, establishes timber management as a major activity in LUD IV areas and in many LUD III areas on the Tongass. Within this direction, however, considerable flexibility for harvest design is possible. Involvement of resource specialists during planning and implementation of the timber operating plan will further address concerns for protection of other resources.

2. Meeting the social and economic needs of area communities is a second concern. This issue is complex because of the different lifestyles and land dependencies of the communities affected by the plan. For example, Sitka and Wrangell rely heavily on the ALP mills for economic and population stability; the communities do not, however, use the proposed harvest areas extensively for recreation or subsistence. Tenakee Springs, on the other hand, derives less economic benefit from timber harvest but relies heavily on Tenakee Inlet for subsistence and local lifestyle. A third situation exists in Hoonah where subsistence and lifestyle are dependent upon the proposed harvest areas in Freshwater Bay and Whitestone Harbor. This community, however, anticipates and welcomes future economic benefits from timber operations. Other communities, both those in proximity to harvest areas and those with substantial economic dependencies on these lands, have expressed concerns as well. Alternatives developed for the operating plan reflect the effort to serve these various community expressions.

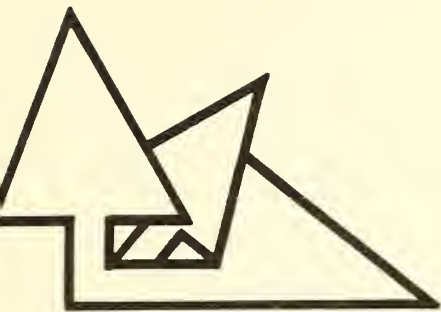
3. The planning process and role of the public in reaching decisions are, in themselves, issues of importance. A number of concerns have been expressed that public comments are not effectively used in decision-making. Some feel that comments are requested either too soon or too late in the process

with the result that comments are uninformed or are irrelevant to the decision. The team chose to make public contact early with considerable community and interest group involvement during early planning phases. The resulting comments have had a major effect in shaping early planning decisions. Ample opportunity to modify these early comments will, however, be provided during the period for review of the draft environmental statement.

A related issue is the concern that five-year operating plans do not provide sufficient context for evaluation of proposals. Viewed for one operating period, proposals may not seem significant. However, when evaluated in terms of past and future harvest, long-term impacts may be apparent. The Tongass Land Management Plan provides some of the information which has been needed for broader review of operating plans. In addition, the 1981-86 team has identified the volume remaining in proposed harvest areas so that the timber available for the 100-year rotation is known, which is shown in later sections of this statement. Past harvest areas are shown in relation to current proposals in the maps contained in the second book.

4. Selection of areas for harvest is of concern to some publics. Some areas favored for protection by environmental interest groups are allocated to LUD III or LUD IV under the Tongass Land Management Plan. They suggest that some of these favored areas be deferred from harvest until later in the operating period through a system of priorities. While there may be management reasons to exclude some areas from the 5-year operating period timber harvest (see Section III-Planning Alternatives and Recommendations), such a system of priority deferral is impossible once areas have been selected for the operating plan. Under the timber sale contract, timber operators must have sufficient flexibility within the planned period and the operating area to manage camps, equipment, and personnel efficiently; even flow production and sustained employment depend upon this flexibility. The close correlation between cost of development, particularly roads, and resulting volume accessed also requires that areas planned for harvest be available as needed by the operators.

In addition to harvest deferral of some favored areas until late in the five year operating period, exclusion of other areas until subsequent operating periods is also recommended by the Southeast Alaska Conservation Council (SEACC). Kadashan and Kuiu Island are of specific concern to SEACC.

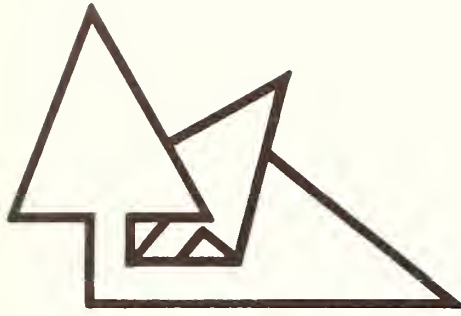


The fish and wildlife values of the Kadashan watershed and the opposition of many Tenakee Springs residents to harvest in Kadashan was recognized when this area was scheduled for 1981-86 timber harvest by the Tongass Land Management Plan. The management direction for resource protection which is included in TLMP response to Kadashan's known values (see the first part of the "Appendix"). The IDT which prepared this statement excluded Kadashan from harvest consideration until TLMP was completed. At that time, the IDT met with Tenakee Springs residents to review TLMP direction with residents and to encourage Tenakee's participation in development of a sensitive management plan for the Kadashan area.

Timber harvest in the East Kuiu Management Area during 1981-86 is also scheduled by the TLMP final environmental statement. The LUD IV designation of the five Value Comparison Units in this Management Area reflects somewhat lower overall resource values than those of Kadashan. Here too, however, TLMP management direction recognizes the special values of No Name Bay, Seclusion Harbor, Port Camden, and Threemile Arm (see "Appendix"). Interdisciplinary team planning for these areas meets this direction.

In conclusion, the interdisciplinary study has responded to TLMP direction by including these two areas in alternatives for harvest during 1981-86 with resource protection measures as recommended in the TLMP-FES.





Capability and Suitability

Capability and Suitability

The capability and suitability of the Tongass to provide commodity and amenity values was determined by six land assessment task forces for the Tongass Land Management Plan. Inventory data, reflecting land capability, was gathered, stored, and assessed Forest-wide for 867 Value Comparison Units (VCUs). The evaluation of this resource data took into consideration environmental and economic consequences and effects on land use capabilities. The resulting Land Use Designations (LUDs) specify the suitability of each land unit for specified management emphasis. Inventory data for each resource and Land Use Designations for all Value Comparison Units can be found in the task force working reports and final TLMP environmental statement.

The 1981-86 operating plan proposes timber harvest in 21 Value Comparison Units. All VCUs included in the plan are allocated to LUD III or LUD IV by TLMP.

II. Affected Environment





Physical Factors

The sale area is located within a system of glaciated islands in the Alexander Archipelago of southeastern Alaska. Principle islands within the sale area are Chichagof (2,062 square miles); Baranof (1,636 square miles); and Kuiu (746 square miles). The area is located approximately between latitudes 56 degrees and 57 degrees north.

Detailed description of the area and its principle resources can be found in the Southeast Alaska Area Guide; the Tongass Land Management Plan and associated task force working reports; and the series "The Forest Ecosystem of Southeast Alaska," prepared by the Pacific Northwest Experimental Station (PNW). Copies of these documents and Specialist reports from the 1981-86 study are available from the Chatham and Stikine Forest Service offices.



Physiography

Pleistocene glaciation (2,000,000 to 10,000 years ago) has had a major influence on the topography, soils, and ecosystems of the area. U-shaped valleys, rolling glaciated lowlands, drumlins, cirques, outwash terraces, and other evidence of glacial advance and retreat dominate the landforms of the area. Compact glacial till mantles the coast, valleys and lower flanks of mountains and benchlands up to about 1,500 feet elevation. Post-glacial ash and pumice deposits, resulting from volcanic eruptions on Kruzof Island (near Sitka) 6,000 to 9,000 years ago, are extensive on northern Baranof and southern Chichagof Island.

The physiological history of the region shows that natural debris avalanches and debris flow are hazards in areas where valley walls exceed the stable angle for soil retention. This potential is addressed in the analysis of soil impacts (Section III).

Climate

Southeast Alaska is recognized by the National Weather Service as a maritime climatic zone--typically cool, cloudy, and moist. Temperatures range from the mid-40s to the mid-60s in summer and from the high teens to low 40s in winter. Storms and heavy precipitation may occur throughout the year but prevail during September, October, and November. The driest months are April through July. Surface winds are moderate throughout the study area and occasionally reach gale velocities during major fall and winter storms.

Climate influences timber operations in two major ways. First, study indicates that 27 percent of annual tree mortality on the Tongass National Forest is attributable to wind. Consideration of potential windthrow, thus, becomes a major factor in planning cutting unit boundaries, stream buffers, and wildlife travel corridors. Secondly, climate limits the logging season to the period April through November. This is an important factor in calculating economic viability of timber operating plans.

Additional influences of climate on timber management include: reduction of harvest impacts on summer stream temperatures through cool air temperatures and general cloudiness; improved tree regeneration through abundant moisture; reduction of wildfire as a resource threat. The relationship of climate to



the soils and vegetative ecosystems of the Tongass is considered in detail in Forest Service publications.

Soils

Steep sideslopes are common in the broad, U-shaped valleys of Baranof and Chichagof Islands. Valley sidewalls are often dissected by deeply-incised first-order streams (V-notches). Soil parent materials include glacial till, organic matter, volcanic ash, colluvium and residuum. Soils formed in fine textured marine or lacustrine deposits are present at low elevation (below 500 feet) in the Iyouktug and Seal Creek drainages. The East Kuiu Management Area, with the exception of a large alpine area at the head of Camden, Threemile, and Lagoon VCUs, is characterized by low-lying rounded hills that have been glacially scarred. Glacial deposits are absent in many places and, where present, are generally shallow. Valley sideslopes typically have a stair-step appearance. Soils on the more gentle slopes are poorly drained mineral soils and muskeg. Soils on the escarpments are shallow, well-drained soils over bedrock.

The cold, wet climate of the study area is primarily responsible for the large accumulation of organic matter. Mineral soils typically have a duff layer of several inches to a foot or more. Organic soils, including muskegs up to 30 feet deep, develop on the more gentle slopes. Soils in the study area are typically very acidic and have low natural fertility.

They have a very shallow rooting depth, due primarily to a shallow nutrient cycle. Soil maps and soil productivity maps for the study area are available at USDA Forest Service offices in Petersburg and Sitka.

Soils of southeast Alaska are resistant to surface erosion as long as the surface duff layer remains intact. When the duff is removed, however, the underlying mineral soil is very erosive. A significant amount of the man-caused soil erosion and sedimentation is associated with roads. Timely stabilization and revegetation of cut and fill slopes is necessary to reduce much of the erosion and sediment production.

Soil mass wasting, resulting from steep slopes and/or unstable soils, is a major consideration in planning timber operations. Soil erosion as mass land failure is a natural process but may be accelerated where mineral soils are exposed or where roads undercut slopes or concentrate runoff.

Most mineral soils are thixotropic (in a state easily changing from gel to liquid when agitated). Very low-bearing strength makes the soil unsuitable for most engineering purposes, especially road building. Nearly all roads in the study area need to be built by rock overlay.



Water Resources

Precipitation in southeast Alaska averages more than 100 inches a year. Most precipitation runs off the land into lakes and streams as streamflow because soil water storage and ground water components are satisfied. Streams usually originate in the alpine and sub-alpine ridge crests, flowing down steep, bedrock controlled V-notches and often following faults or bedrock joints. Combinations of steep slopes, heavy precipitation, and shallow soils with limited water holding capacity result in large streamflow fluctuations. Peak flows occur in the fall and spring, and low flows in the summer and winter.

Mean annual runoff in the northern Tongass, including Chatham and Stikine management areas, is from 10-20 cubic feet per square mile (cfs). Runoff rates increase in a southerly direction on Baranof and decrease in an easterly direction on Kuiu Island. Mean annual peak runoff is about 100 cfs, with a general range of less than 50 cfs to 200 cfs.

Nutrient concentrations in surface waters of these study areas are low and natural variability is high. Because of low nutrient levels, primary production may be below the area's physical maximum. Increased nutrient concentrations would be advantageous to primary productivity in these areas. Suspended sediment loads of streams is also generally low.

Water, as a solvent and mechanical erosive agent, is never completely free of organic and inorganic matter. Sediment in streams comes from both natural geologic processes and from human activities. Steep terrain and large amounts of rainfall may increase the amount of sediment production resulting from such activities as road construction and timber harvesting. Ameliorating conditions include an abundance of medium-textured soils with thick organic surface layers; high permeability and infiltration rates; and conditions that usually favor rapid revegetation of disturbed soil. Disturbed soils are a source of sediment that may enter surface waters through overland flow. Overland flow is a function of soil type and condition and precipitation intensity.

Executive Orders 11988 and 11990 direct that development on flood plains and wetlands be avoided where there is a practical alternative. All activities and development proposed in defined flood plain or wetland areas have been designed to minimize potential impacts to the area. Mitigating measures

have been incorporated in development and use plans to the extent practical. Development in flood plains and wetlands is due to finding no practical alternative to such development, whether logistical or physical constraints. Development in these areas has been kept to a minimum and does not appear to pose a threat environmentally or to human life.

Air Quality

Air quality in southeast Alaska is generally very good. The region contains no designated nonattainment areas for air quality. There are relatively few major emissions sources in the region, and pollutants are rapidly dispersed by winds and removed by precipitation. Air quality in the state is regulated by the Alaska Department of Environmental Conservation. There are roughly 22 facilities in the region currently operating under air quality control permits, primarily diesel-electric power plants, asphalt plants, incinerators, wood waste boilers, and pulp mills.

Three of the emission sources are associated with Alaska Lumber and Pulp timber operations. These are the ALP pulp mill at Sitka and the two ALP sawmills at Wrangell. The pulp mill is one of the largest sources of sulfur dioxide and particulate matter in the state. The facility contains three chemical recovery boilers, two power boilers, and a caustic liquor incinerator. The facility is considered to be in compliance with sulfur dioxide emission standards, but has not yet achieved compliance with particulate matter standards, due in part to the burning of sludge from the wastewater treatment facility in the power boilers, which was initiated in mid-1978. The mill has operated since 1975 under an air quality variance, which was amended in June of 1979. Alternative control measures are being considered for the boilers. The pulp mill is scheduled to come into compliance between December 30, 1980 and July 31, 1984, depending upon the control measure selected.

In addition, public concern has been expressed regarding possible odor and visibility problems in Sitka which may be linked to the pulp mill. The Department of Environmental Conservation received approximately 98 letters of complaint from local residents in 1978 and 63 letters in the first half of 1979; efforts are underway to verify the odor and visibility problems and identify possible sources. The State has no specific air quality standards regarding odor or visibility, but does have a general regulation prohibiting emissions which create public nuisance.



In 1979, each of the sawmills in Wrangell requested renewal of variances for the particulate matter emissions from wood waste boilers. Under current operating schedules and conditions total daily emissions are well within maximum allowable emissions.

At peak operations, however, emission concentration standards are exceeded. The variance allows continued operation until a comprehensive program for power generation at the Sitka and Wrangell mills, incorporating wood waste disposal, is completed by Alaska Lumber and Pulp.

Fire

The incidence of forest fire in southeast Alaska is extremely low, although evidence of old burns exists. Summer rainfall and the relative infrequency of summer electrical storms are major factors in reducing wildfire potential.





Biological Factors

Vegetation

Forest stands on the sale area are primarily western hemlock and Sitka spruce. Western redcedar is found on Kuiu Island but does not extend northward to Baranof and Chichagof Islands. Alaska cedar is occasionally found scattered throughout the spruce-hemlock stands on Baranof and Chichagof. A variety of lodgepole pine is found on muskegs or poorly drained sites. Dwarf mountain hemlock is also often associated with muskegs and with southern alpine areas. Alder lines some streams and many shorelines, dominating landslide and other highly disturbed areas. Of these species, all except lodgepole pine and alder are of commercial value. (The two non-commercial species are, however, valued by local residents for firewood and play an important role in the total forest ecosystem.) Commercial Forest Land (CFL) acreage and operability for management areas included in the 1981-86 study are displayed in Table 1:

Table 1: Operable CFL in 1981-86 Study Areas

MANAGEMENT AREA	TOTAL ACRES	TOTAL CFL/1	TOTAL OPERABLE
Whitestone	73,251	35,724	21,903
Freshwater	119,201	54,839	38,484
Tenakee Inlet	105,267	28,545	16,804
Kadashan	33,641	17,787	12,084
Crab Bay	89,213	33,736	20,637
Corner Bay	135,542	78,504	55,942
Kelp Bay	103,522	36,624	27,812
East Kuiu	141,955	98,088	58,632

Forest understory is particularly dense in the old-growth stands where trees of various ages, sizes, and conditions provide space and light for smaller plant communities. Understory vegetation of blueberry, huckleberry, rusty menziesia, and devils club are typical. Muskeg areas are dominated by sphagnum mosses, sedges, rushes, and ericacious shrubs. Grass-sedge meadows are located at lower elevations along the coast. Low mat-forming vegetation adapted to snowpack and wind abrasion dominate alpine areas;

heaths, grasses, and low plants such as deer cabbage are typical.

Recommendation to the Smithsonian Institution of sensitive plants which may merit classification as threatened or endangered is the responsibility of the U.S. Fish and Wildlife Service in Alaska. Preliminary plant studies of the Tongass and Chugach National Forests were completed in 1978; the second phase of the study will include search for living specimens, beginning in 1979. Based on this study, a sensitive plant list will be developed in accordance with Forest Service policy in Region 10.

No species presently classified as threatened or endangered is known to exist on areas being considered for timber harvest during 1981-86. Any species which might be recognized as a sensitive species or classified as threatened or endangered will be managed according to regional policy which requires that the agency take "such action as necessary to insure that actions authorized, funded, or carried out by them do not jeopardize the continued existence of such endangered species and threatened species or result in the destruction of habitat of such species" (FSM 2633.4-1, February, 1979).



1/ Muskeg, estuarine and alpine acreage accounts for the difference between total acres and total Commercial Forest Land.



Wildlife

Wildlife Species and Habitat--The Wildlife Task Force for the Tongass Land Management Plan assembled habitat data and criteria for eleven species or groups of species. Those data are available in the TLMP Task Force working report. This information is summarized in the 1981-86 EIS Wildlife Specialist Report along with information on nine other wildlife species found in the 1981-86 study area. Wildlife included are:

Sitka black-tailed deer	Mountain goat
Brown bear	Marine mammals
Black bear	Grouse, Ptarmigan
Wolf	Vancouver Canada goose
Beaver	Seabirds, Shorebirds
Mink	Waterfowl
Marten	Other avian species
River otter	Bald eagle
Wolverine	Raptors
Small mammals	

Special or Unique Wildlife Areas--Areas of special or unique importance for wildlife values were identified during preparation of the Tongass Land Management Plan and during the evaluation and examination process for the 1981-86 study areas. Some key areas are highlighted in the following list.



<u>Areas</u>	<u>VCU</u>	<u>Feature</u>
Whitestone Harbor Suntaheen	209	Deer winter range study unit. (Deer concentration)
Freshwater Bay Freshwater	215	Vancouver Canada Goose nesting.
Freshwater Bay East Point	218 (10%)	Same as above.
Tenakee Inlet Salt Lake Bay	202	Waterfowl and brown bear concentrations. Salt Lake Bay proposed Forest Service Lab/National Marine Fisheries Service coop research study (see below).
Corner Bay Trap Bay	237 238	Trap Bay proposed FS Lab/NMFS coop study on effects of timber harvest/road building activities on fish.
Kadashan	235	Waterfowl, bear and deer concentrations; proposed Univ. Alaska Dolly Varden/Coho study area.
Kelp Bay Portage Arm	296	Waterfowl/bear concentrations, deer winter range study unit.
East Kuiu Island Port Camden	420	Inland Freshwater Lakes waterfowl concentration area.
East Kuiu Island Three Mile Arm	419	Waterfowl molting bear and eagle concentration deer winter range study units.
Salt Lagoon	418	Waterfowl molting, Bear concentrations.
No Name Bay	417	Deer winter range study unit.



Threatened and Endangered Species--There are no known terrestrial mammal species or avian species in the areas that fall under the protection of the Endangered Species Conservation Act of 1969 (16 U.S.C. 668aa) and 1973 or the Alaska Department of Fish and Game official endangered list.

However, three species may utilize various habitats on a periodic-seasonal basis during their migrations. These are the Aleutian Canada goose (Branta canadensis leucopareia), American peregrine falcon (Falco peregrinus anatum) and arctic peregrine falcon (Falco peregrinus tundrius). A subspecies of peregrine falcon nests in various habitats in southeast Alaska; however, it is not classified as threatened or endangered. This is the Peale's peregrine falcon (Falco peregrinus pealei).

Members of the order Cetacea (whales) occur or potentially occur in the straits, sounds, fjords, inlets, ports and channels of southeast Alaska. Those that are classified as threatened include the sperm whale (Physeter catodon), gray whale (Eschrichtius robustus), blue whale (Balaenoptera musculus), finback whale (Balaenoptera physalus), sei whale (Balaenoptera borealis), humpback whale (Megaptera novaeangliae), right whale (Eubalaena glacialis), and bowhead whale (Balaena mysticetus).

The bald eagle is classified as endangered in the contiguous United States, although it is not on the threatened or endangered list for Alaska. The eagle is protected by the Bald Eagle Protection Act (1940) and the Migratory Bird Treaty Act 1918 (1974). In addition, eagle nest trees are protected through a cooperative agreement between the USDI Fish and Wildlife Service and the USDA Forest Service which restricts all disturbance and impact within a radius of 330 feet of each nest tree center. The necessity of providing adequate perch tree sites near nests is recognized.

Fish

The Fisheries Task Force for the Tongass Land Management Plan assembled data for the following fish and shellfish: pink, chum, coho, sockeye, and king salmon; cutthroat and rainbow or steelhead trout; Dolly Varden char; Dungeness, tanner and king crab; shrimp and other shellfish such as clams and scallops; herring and smelt. Of these species, all except the king salmon spawn within the 1981-86 study areas.

Most of the salmon caught in southeast Alaska originate in streams and lakes draining watersheds lying within the boundaries of Tongass National Forest. Spawning and rearing areas may vary in size from large rivers to small intermittent tributaries. The most productive spawning and rearing habitat usually exhibit the following conditions:

Spawning Habitat--The most productive spawning habitats have an underlying layer (substrate) of stable, highly permeable, and relatively sediment-free gravel. Productive habitat is free of barriers to the upstream movement of spawning adults and provides salmon with spawning area and escape cover in close proximity.

Rearing Habitat--There should be a high ratio of pools to riffles and low to moderate stream gradient and water velocities. The most productive rearing habitat has no barriers to upstream and downstream migration, but provides undercut banks, natural debris, and overhanging vegetation as shelter for juvenile fish, stream nutrients, and habitat for food organism.

Streamside habitat constitutes one of the most productive areas in the forest environment. Stream-banks provide important shelter, hiding places, food and rearing areas for most salmonids (salmon, trout, and char). Juvenile salmonids depend upon and extensively use fallen trees, undercut banks, tree roots and other well-protected areas for rearing. Removal or disturbance of habitat can lower the fish-producing capacity of a stream, while sediment introduced into streams can retard development of incubating eggs and invertebrates by reducing water flow through streambed gravels. Streams susceptible to excessive temperature ranges require special restrictions on canopy removal.

Adult and juvenile salmonids should have unhampered access to all fish habitat. Coho, steelhead, cutthroat and Dolly Varden tend to spawn in headwater



areas and tributaries. Their fry disperse downstream to fully utilize all habitat. Juvenile fingerlings move about considerably as rearing populations adjust themselves to carrying capacities. Juveniles also move in significant numbers to overwinter in small tributaries where temperatures are moderated by groundwater sources.

Estuarine Habitat--Approximately 30,000 miles of tidal shoreline (roughly 60 percent of the total Alaska coast) borders the labyrinth of islands of southeast Alaska. An intricate maze of marine features such as sounds, straits, canals, narrows, and channels create a great diversity of estuarine and wetland habitat. Estuaries and wetlands, although separate ecosystems, usually occur in close proximity to each other. Many species of fish and wildlife depend heavily upon both of these highly productive environments during various life history stages.

A variety of changes to estuarine habitat can negatively affect Dungeness crab. As larvae, they are particularly susceptible to changes in water quality. Immediately after moulting, crabs bury themselves to avoid predators. During the few days required for the new shell to harden, crabs are more vulnerable to environmental change because of their immobility. Upland and shoreline development, as well as marine log storage, may adversely affect fish and shellfish habitat.

Timber harvest impacts to fish resources can substantially be reduced by evaluating sensitive habitats during IDT field reviews and incorporating modifications in cutting unit boundaries, road locations, prescribed logging systems, etc. Many such measures cannot be detected with reconnaissance level data available in this planning process.

Interdisciplinary Teams should examine proposed cutting units, road locations, stream crossing sites and proposed structures, landings, proposed rock pit and rock borrow sites, camp locations, log transfer and upland log storage sites, rafting locations, or any other proposed activities which may affect fish habitat. Fish Habitat Management Units, and especially Fish Habitat Sensitivity Zones, Estuarine Habitat Management Units, and Estuarine Habitat Sensitivity Zones indicate areas most likely impacted by timber harvest. Fish habitat must be marked (ie. plastic flagging) and indicated on "release" maps for protection where timber harvest or related activities are planned. Site specific activities determined to be adversely affecting fish habitat shall be stopped

immediately and not resume until remedial measures can be prescribed by a fishery biologist or IDT.

Fish Resource Values--Associated with fish resources are amenity, sport, and commercial values. Amenity values are those which contribute to the aesthetic enjoyment of an area because the resource simply exists. Sport values reflect expenditures of sport fishermen, for fishing tackle, license, travel, food and lodging expenses. Commercial values are those paid to the fishermen by the first-line fish buyers, as well as the expenses involved in actual fishing.

Within the study area numerous amenity and sport values exist and are discussed in the Recreation resource descriptions. Commercial fisheries values are also high and are economically important to most of the affected communities. Because of the complexities of making total economic analyses and impact evaluations of the fishery industry, projections of commercial values can only be approximate. However, detailed analysis for a few specific areas and fisheries are available, and can be used to indicate fishery commercial values within the study area.

Data collected on estimated commercial values of pink and chum salmon on East Chichagof Island and commercial shellfish indicates an average annual commercial fisheries value (for these species) of approximately \$1,400,000.

Threatened or Endangered Species--No fish species classified as threatened or endangered is known to occur in southeast Alaska. It should be noted that fisheries inventories have not been fully developed in the region, and that specific effort to identify threatened or endangered species has not been undertaken.





Socioeconomic Factors

Visual Resource

The visual resource affected by the 1981-86 operating plan is characterized by a strong diversity in landscapes. This includes areas of unique vegetation patterns, scenic rock formations and waterforms.

An inventory using the "National Forest Visual Management System," explained in more detail on pages 116-117, was done for the study area. One of the primary components of this method involves the rating of Variety Classes (minimal, common, distinctive landscapes) based upon Visual Character Types (large areas of similar land and water forms). The visual quality of a landscape is based upon the amount of variety relative to the visual character type within which it exists. The visual resource for the study area can be described generally in terms of the five character types present in southeast Alaska. For more information, see "Visual Character Types," No. 63, published by the USDA Forest Service in Alaska. The landscape character types occurring in the ALP 1981-86 operating area are:

Chichagof characteristic landscape, which exists on all of Chichagof Island, the northern one-fourth of Baranof, and Kruzof Island, consists of generally rounded land forms. However, the northern portion of Chichagof Island has rugged and jagged landforms with a maximum relief of 2,500 to 3,000 feet. Higher portions have dramatic rocky spires and narrow, sharp ridges, visible for many miles. Rocky shorelines are common with many scattered gravel and sand beaches. Streams are generally clear and offer considerable variety, compared to some character types, eg., pools, rapids, cascades, falls, meandering forms. Lakes are plentiful. Salt-water bays and estuaries are numerous and exhibit much variety. Lower slopes are generally conifer covered or exhibit a combination of muskeg and scrub-conifer. Muskeg and conifer mixtures are most common on West Chichagof and East Admiralty.

The Kupreanof lowlands characteristic landscape, which exists on Kuiu Island, Zarembo Island, western Kupreanof Island and northern Prince of Wales Island, consists of islands of rolling terrain displaying past heavy glaciation. Maximum relief is 1,000 to 3,400 feet, separated by an intricate network of waterways and bisected by several low-lying areas. Parts of some of the islands are terraces only a few





feet above sea level. Scattered block-like mountains having rounded hummocky summits, and occasional peaked mounds serve as focal points when viewed from waterways. Other rockforms are insignificant. There are abundant lakes in glacially scoured basins. Parts of some small islands are 30 to 50 percent lake surface. Streams are generally short, often discolored by vegetative stain and offer a variety of stream forms, i.e., pools, cascades, rapids, etc. The maze of saltwater channels and waterways offers variety of its own. The area is largely covered with a spruce/hemlock forest except for the rather extensive muskeg areas which occur in low-lying terraces and upland or ridgetop benches.

Refer to the Recreation resource section on pages 18-22 for further scenery descriptions within the specific Management Areas involved. Specialist reports in the Chatham and Stikine offices include variety class and sensitivity level evaluations and resulting Visual Quality Mapping for the area.

Further refinement of landscape character types to develop a more complete analysis of the variety of landscapes, has been accomplished for the ALP 1981-86 study area.





Cultural Resource

A preliminary archaeological reconnaissance of the management areas included in the study has been completed and is available on file in the Chatham and Stikine Forest Supervisors' offices. As field crews finalize cutting unit proposals, intensive field surveys will be conducted.

Based on preliminary reconnaissance within the study areas, little has been found to indicate prehistoric use. However, two major sites indicating occupancy as early as 10,000 years ago have been located just outside the study areas; these are the Ground Hog Bay site on the Chilkat Peninsula, north of White-stone Harbor, and the Hidden Falls site, south of Kelp Bay. A third site has been located within the Kadashan Management Area, supporting an assumption that further prehistoric sites may exist within the sale area.

Historically, the area has been claimed and used by four primary tribal groups. The Sitka people used the lower regions of Peril Strait; Hoonah people used Port Frederick and the area between Points Sophia and Augusta; and Angoon groups ranged through False Bay, Tenakee Inlet, Catherine Island, Peril Strait, and, occasionally, Kelp Bay. Kuiu Island is believed to have supported a tribal group of its own at one time, though most records show it being used by various Kupreanof and Prince of Wales tribal groups. Village and seasonal hunting encampments were scattered throughout these lands.

Euro-American usage of historical importance includes mining, fish processing, fox farming, and a number of isolated cabin residences.

Known or suspected cultural sites within the study area which would require archaeological examination if impacted by timber harvest are as follows:

Whitestone Harbor: Pitch cut spruce trees; reported hunting and trapping camps; burial site; petroglyph; early logging camp site; fishing camps.

Freshwater Bay: Historical mining camp; pitch cut trees and garden plot; village site, petroglyphs; fishing camps.

Tenakee Inlet: Two village sites; stripped cedar and pitch cut spruce trees and rock cairn; reported seal hunting camps; petroglyphs.

Crab Bay: Reported hunting and fishing camps; village site; burial site; pitch cut and stripped trees; petroglyphs.

Corner Bay: Reported hunting and fishing camps.

Kadashan: Prehistoric rock chips and suspected village site; petroglyphs.

Kelp Bay: Pitch cut and stripped trees; reported hunting and fishing camps; village site; petroglyphs.

Kuiu Island: Various Tlingit sites, including a village and fort; garden sites; pitch trees; fishtraps; petroglyphs; reported hunting and fishing camps.



Wilderness

The Tongass Land Management Plan, which is the Tongass National Forest supplement to the Roadless Area Review and Evaluation (RARE II), recommends wilderness management for one-third of the national forest acreage, or 5.4 million acres. Another 2,746,000 acres are designated LUD II, for roadless backcountry management. Development associated with timber harvest is prohibited in these areas.

The remaining lands, totaling approximately 7,045,000 acres, have been allocated to LUD III and LUD IV which permit commodity development activities. All areas included in the study for ALP's 1981-86 operating period are designated LUDs III or IV.



Recreation Resources

With few exceptions, the VCUs included in the 1981-86 study were assigned moderate to low ratings for primitive and semiprimitive recreation opportunity by the Tongass Land Management Plan. These ratings reflect several factors: proximity of some of the units to earlier timber harvest areas; an overall lack of outstanding natural attractions in relation to more spectacular or unique areas; and an averaging of the rating system over the entire VCU, even though specific sites within the unit might have extensive recreation use or high potential.

Specific site investigation for the 1981-86 study has confirmed these ratings in some areas. In others, unique attractions or high community recreation use was discovered, revealing higher recreation value than projected by TLMP. Specialist reports (available on request) include maps displaying recreation opportunities inventoried.

Whitestone Harbor Management Area

Small boat traffic, tour boats, and Alaska State ferries use Chatham and Icy Straits and Lynn Canal extensively. Views of the shoreline are normally from middle channel viewing distances and the shoreline is unremarkable.

Existing land based recreation is concentrated along the shorelines of this heavily timbered, often rugged land area. Twelve to fifteen small boats are sometimes observed sheltered in Whitestone Harbor, the most heavily used anchorage in the area. Even though two good beaches are located at the entrance to the harbor, onshore recreational use is primarily by hunters. Spasski is also used by small boats.

Subsistence and sport fisheries occur on fish and shellfish throughout the Whitestone Harbor Management Area. Sand beaches and interesting limestone formations are natural attractions between Wukuklook Creek and Iyoukeen Cove. In this area, recreationists may enjoy the caves at Iyoukeen, picnic along the beaches, collect numerous wildflowers and driftwood, or observe brown bear which traverse the grass flats. There are geological collection sites along the shoreline on northeast Chichagof Island, and two special use cabins in the area, one at Spasski Bay and one at False Bay. Boaters are attracted to the site of the gypsum mine (1906-1923). Listed on Hilson's boating guide, the site has historical interest, although most of the facilities are rapidly disintegrating.

Two outstanding areas, neither reflected in TLMP nor receiving extensive use, were explored during the 1981-86 field study. The Mt. Whitestone - Sonyakay Mountain area is one example. One-third of this area is in the Freshwater Bay Management Area. Not directly visible from the water and surrounded by several miles of densely forested rugged terrain, the area receives little use due to difficult access. However, once reached, it is notable for its open and easily walked alpine meadows. The mountains are rugged; the geology is interesting (particularly in the limestone areas). Wildflowers are abundant, deer are plentiful, and the views from the alpine meadows are spectacular in all directions.

A second, similarly attractive alpine area is located in the mountains immediately south of Hoonah.

Freshwater Bay Management Area

TLMP displayed low to high value ratings for the VCUs in this management area. Field study for the 1981-86 plan confirmed these ratings but found that, where outstanding features lie on several VCU boundaries, some exceptional recreation values fail to emerge in the averaging process of the rating system.

Several outstanding alpine recreation areas exist in the Freshwater Bay Management Area. Two of these, the Sonyakay and Hoonah Mountain areas, have been discussed in association with the Whitestone Harbor Management Area. Another significant alpine area is found on Sleeping Man Mountain. The ridge top includes limestone rock formations, some challenging to potential rock climbers. Spectacular panoramic views and plentiful deer reward hikers who use an easy access route along the north side of Sleeping Man Mountain. Proposed logging roads in the area would increase accessibility.

Two lowland recreation areas are found adjacent to saltwater. The anchorage at Freshwater Creek provides access for sportsmen attracted to the high fish and wildlife values of the grass flats and small lake-pond system. Additional good anchorages, at Cedar Cove and Pavlof Harbor, allow hikers to reach the scenic red cliffs and sand beaches in the area. Good sport fishing is reported at Pavlof Lake, and a portage from the harbor to the lake is available along the north bank of the connecting river. Pavlof River offers limited opportunities for a scenic canoe route, with access provided at the Kennel Creek logging camp.



Tenakee Inlet Management Area

This management area is popular with both Hoonah and Tenakee Springs sportsmen. The existence of a portage from Tenakee Inlet to Port Frederick Bay results in additional recreational use. With Alaska State Marine Ferry service to Tenakee Springs and Hoonah, recreationists are able to take the ferry to one of these communities and make a sheltered bluewater canoe trip, using this portage.

A scenic waterfall is visible from Tenakee Inlet. Another highlight of the portage canoe trip between Tenakee Springs and Hoonah is the scenic rock formation, known as Chimney Rock, at the point south of Neka Bay. The most aesthetic landscape is from the Narrows in Salt Lake Bay to Hoonah.

Kadashan Management Area

This area was inventoried for the ALP 1976-81 period. The inventory rated the Kadashan tidal grass meadow as having high recreation opportunities especially involving waterfowl and bear hunting, wildlife observation, and sportfishing in the lower reach. This is one of the largest tidal meadows in this part of southeast Alaska.

With respect to scenic values, the landscape of Kadashan forms the background view from Tenakee Springs and some areas can be seen from the ferry servicing the community.

Corner Bay Management Area

Opportunities for dispersed primitive recreation in the VCUs of this management area are minimal because of extensive timber development activity which has already occurred. However, dispersed semiprimitive recreation opportunities are better than average because of good access. Increased road access during 1981-86 will expand recreational use in this area. Recreational pursuits such as the gathering of edible plants and shellfish, hunting and fishing, and the simple enjoyment of normally inaccessible surroundings will therefore be enhanced.

Natural attractions in the area include an underground salmon run and popular sport fishing at the Sitkoh and Kook Lakes where recreation cabins are available. Users enjoy the available anchorage at the Corner Bay anchorage. Many visitors also fly directly to the lake cabins, adding to their heavy use. The Kook Lake cabin was used for 2,150 visitor days (visitor day = 12 hours) during the 1974-77 period;

the Sitkoh Lake cabin provided for 2,075 days during the same period. The Sitkoh Lake cabin is the only recreation cabin (within the Chatham Area) located near a steelhead run.

Kelp Bay Management Area

Catherine Island is a scenic background to the Alaska Marine Highway. This portion of the highway is traveled by tour and ferry boats, commercial boats, and local and out-of-state small boats. The amount of local sports use is unknown but is probably limited to shorelines and areas accessible by logging roads.

Of the three Kelp Bay Arms, South Arm is most attractive with its steep fjord-like side walls that dive into the water. Strong avalanche patterns provide great diversity in the landscape. A beautiful grass flats environment exists at the head of the arm where wildflowers are very abundant. Wildlife viewing expectations are high, and the dramatic Baranof Mountain landscape serves as a scenic backdrop. The anchorage is sheltered from wind but requires deep and heavy ground tackle, often not aboard recreational boats. Anchor buoys would enhance recreational use.

The adjoining side slopes of Portage Arm are heavily forested and the shorelines are straight and rocky. Boaters may venture up the waterway for preliminary exploration, but when considering the marginal anchorage and recreational opportunities that exist in the area, it is unlikely that they will stay long.

Crab Bay Management Area

The recreation and visual inventory for the ALP 1976-81 period rated the tidal grass meadow at the head of Crab Bay and adjacent views as moderate to high. The northern half of this management area was not surveyed during the 1981-86 resource inventory. The southern portion, however, was inventoried with minimal recreation opportunities found. The scenic values of the landscape are the predominant resource. The southern boundary of the management area provides the background and middleground view from the ferry route on Peril Strait. The northern boundary provides the background view from Tenakee Springs and the ferry serving the community.

The estuary found at the north of Finger Creek offers a small boat anchorage adjacent to the scenic park-like environment of the area.



East Kuiu Management Area

Existing recreational use of the area is relatively low. Most recreation users come from Kake and Pt. Baker. The area is well known for its black bear population. Deer hunting has been closed in recent years due to low populations. Fishing is generally good in surrounding salt water and there are several good anchorages in the area, often used by commercial fishermen. There are no developed recreation facilities in the management area. Kayakers occasionally portage between Port Camden, Three Mile Arm, and Bay of Pillars, visiting Kake as an embarking and returning point via Port Camden and Rocky Pass.

Tour ships and commercial vessels using Sumner Strait pass southeast of Strait Island and within three to five miles of the southeastern part of Reid Bay/Alvin Bay area. Travelers and fishing vessels using the small boat route through Keku Strait view the east coast of the area in the far middleground to background. Light aircraft primarily serving the Rowan Bay area often pass over the area at fairly low altitudes.

The East Kuiu Management Area is divided into six rather distinct areas related to salt water bays, each with somewhat different characteristics:

Port Camden

Port Camden is a long and relatively narrow bay extending approximately eight miles south and west from Keku Strait and ranging in width from over two miles at the mouth to less than one-half mile near the head. The character of the bay changes dramatically as the visitor passes from low, rolling, forested hills at the mouth to high, cliff-like walls near the head that enframe views of the snow covered alpine area between Port Camden and Bay of Pillars. There are several good anchorages on either side of the bay. Sport fishing is good; waterfowl and sea mammals are in abundance. Recreation potential is concentrated upon the salt water; however, there is an interesting lake/stream complex inland on the east side of the bay.

Three Mile Arm

Three Mile Arm also provides a visual transition from open, rolling, forested hills to enclosed head with a dominant alpine view. The steep canyons are lacking, however, and anchorages are somewhat limited. A major stream flows into the bay from the north draining an interesting inland lake deep in the Keku



Peninsula. The stream is walkable except during periods of high water. Several patches of timber have been harvested along the shores, the more recent about 1971.

Seclusion Harbor/Salt Lagoon

Salt Lagoon is an outstanding example of a "salt chuck." Visual quality and abundant wildlife provide outstanding recreation opportunity. Seclusion Harbor provides a fine anchorage. The chuck is only accessible by skiff or other small craft at high tide.

No Name Bay

Quite different in character from the other bays in the area, No Name Bay has a very wide mouth; its inner half is dotted with tree covered islands. The surrounding hills are low and rolling. Recent clearcut timber harvest activity has changed the visual character of the area. There are several good anchorages in the No Name Bay area and wildlife abound.

Alvin Bay

This bay is short and fairly narrow and contains several recent clearcuts. Its visual quality is relatively low but there are some interesting beaches and a good anchorage at the head.

Reid Bay

Open and surrounded by low, rolling, forested hills, this bay provides limited recreation potential when compared with other bays in the area. There are several anchorages and several large, sandy beaches.



Transportation

The existing transportation system consists of presently active and storage category roads, log transfer facilities, and related developments. Use of this existing system is an important part of the 1981-86 proposed operating plan. The existing systems at Kennel Creek, Rowan Bay, Hanus Bay, and in the town of Hoonah will all be used by traffic associated with timber operations. Boat docks with moorage potential for larger craft exist at Hoonah. Small craft docking facilities exist at Corner Bay, Kennel Creek, Rowan Bay, and Eight Fathom Bight (the latter serving the Salt Lake Bay-15 Mile Creek sale area). A 2,500 foot long air strip exists at Hoonah. The Alaska Marine Highway System has ferry terminals at Hoonah, Tenakee Springs, and Kake. All existing and proposed logging camp sites can be served by float plane.

The Forest Service has requested transportation corridor withdrawals throughout Native and State selection areas in the Hoonah vicinity. Right-of-way procedures have been initiated where proposed roads cross patented land in the Gypsum Creek area. Crossing of non-patented mining claims are numerous. The Forest Service has attempted to contact all those concerned about proposed actions according to current procedures. The Forest Service has initiated a "Deed of Further Assurance" for crossing a 1906 Native Allotment Claim in the Hoonah area. This claim has been denied by the Bureau of Land Management but the decision is under appeal.



Maps of the existing transportation system and camps, Native and State selections, certain 1906 Native Allotment Claims, certain patented lands, trails, air fields, ferry terminals and travel lanes, and anchorages are provided in Volume II. Also displayed are proposed roads, log transfer sites, camps, rock quarries, and various associated facilities.

The main feature of proposed road construction during the 1981-86 period is extension of existing road systems. This permits better use of developed facilities, reduced operating costs, decreased impacts to other resources, greater safety for personnel associated with timber operation and increased opportunity to meet a number of Forest management objectives. An additional important feature of the extended road is the opportunity to meet socioeconomic concerns of communities, a particularly important consideration on northeast Chichagof Island. The primary opportunities for development of extended road systems are on Kuio Island, where the present road system can be extended north and south from the Bay of Pillars isthmus road, and on Chichagof, where during the next operating period the proposed road system would connect Freshwater Bay, Game Creek, and Whitestone Harbor with one another and with Hoonah. Forest Management activities projected by TLMP and facilitated by the proposed transportation systems on Chichagof and Kuio Islands include:

Table 3--Proposed Management Activities Assessed By Logging Road Systems (see "TLMP Direction for Management Areas")

NORTHEAST CHICHAGOF

Whitestone Management Area

PROJECT	LOCATION
Alpine Shelter Construction	Suntaheen
Alpine Shelter Construction	Iyouktug
Alpine Trail	Suntaheen
Alpine Trail	Iyouktug
Alpine Trail	Gypsum
Fishway (Habitat Improvement)	Gartina
Fishway (Habitat Improvement)	Suntaheen



Freshwater Bay Management Area

<u>PROJECT</u>	<u>LOCATION</u>
Recreation Cabin	Pavlof
Alpine Trail	Game Creek
Alpine Trail	Freshwater Bay
Alpine Trail	Pavlof
Waterfowl Nest Platforms	Upper Freshwater
Waterfowl Nest Platforms	Pavlof
Fish Habitat Improvement	Seagull Creek
Timber Stand Improvement	Kennel Creek

KUIIU ISLAND

East Kuiu Management Area

<u>PROJECT</u>	<u>LOCATION</u>
Recreation or VIS Construction	Located per demand
Trail Construction	Located per demand
Deer Range Improvement	VCUs 416-420
Fish Habitat Improvement	Alvin Bay/Reid Bay
Fish Habitat Improvement	No Name Bay
Fish Habitat Improvement	Seclusion Harbor
Fish Habitat Improvement	Port Camden
Timber Stand Improvement	VCUs 416-420
Water Resource Improvement	VCUs 416-420

Proposed log transfer and log storage sites during the 1981-86 operating period were reviewed by an IDT (U.S.F.S., U.S.F.&W.S., and N.M.F.S.) in July, 1979. The review was made to determine if these sites comply with the policies outlined in the Southeast Alaska Area Guide (page 100). Recommended actions, with regard to this review, are summarized in letters from U.S. Fish and Wildlife Service, dated July 12, 1979 (Appendix D). The most significant action identified was the need to explore alternatives to inter-tidal log storage (i.e., Fish Bay). An IDT will be formed to make this investigation in 1980 and less impacting log storage alternatives, if any, determined.

Affected Communities

Residents of a number of area communities express regular interest in proposed management activities on the Tongass National Forest. In some cases, these communities have special interest or concern about management of specific resources or areas on the National Forest. To varying degrees the following communities (described in the Tongass Land Management Plan) may be affected by timber operations during the 1981-86 operating period:

Gustavus	Angoon
Kake	Wrangell
Hoonah	Port Alexander
Kennel Creek	Point Baker-Port Protection
Mount Bether	Sitka
Petersburg	Rowan Bay
Tenakee Springs	Juneau
Kupreanof	Corner Bay

In many cases, this interest is a generalized concern. Sitka and Wrangell, for example, rely heavily on the timber industry for economic stability; their interest is, primarily, that local mills remain operational. Communities such as Petersburg, Point Baker-Port Protection, and others are concerned that timber activities be conducted so as to protect the commercial fishery. Other communities, such as Gustavus, Angoon, Kupreanof, Port Alexander, and Juneau, may use specific areas for recreation and subsistence, although this use is understood to be moderate to low on the areas proposed for harvest.

Of those communities which may be affected, Hoonah, Mount Bether, Tenakee Springs, Kake, and the three logging camps are most directly impacted.

HOONAH. Located near the mouth of Port Frederick on northern Chichagof Island, this community has grown rapidly in recent years. Traditionally, a fishing village, Hoonah has experienced severe economic difficulties through closure of adjacent waters to purse seining in 1976. Although Hoonah seiners have been able to operate in other areas, fishing has been for limited periods. A substantial seasonal livelihood has been provided by the 115 unit trolling fleet; however, the new hand trolling regulations imposed by the State are likely to reduce harvest.

The Hoonah Community Action committee is presently examining several options to improve the employment base for the community. Three key prospects are development of timber industries, increased tourism,



and aquaculture development. The community has participated actively in land planning on the Tongass for a number of years, consistently urging decisions which would promote economic stability in the community. The decision of the IDT to expand the 1981-86 study to include Hoonah on an interconnected road system through the Whitestone Harbor and Freshwater Bay Management Areas was in response to a community request.

With pending conveyance of the Huna Totem selection (east of the community of the Spasski drainage), the community regards future development of timber holdings as a major economic and employment opportunity. The road system, along with clustering of related developments, such as a logging camp and log transfer facility, in the Hoonah vicinity, are expected to (1) create local employment; (2) facilitate development of selection lands; (3) attract additional population as a tax base; (4) increase access to favored hunting and recreation areas. An additional benefit is the potential opportunity for increased commerce with the adjacent community of Mount Bether, should that community develop an access spur to the logging road. The mutual benefits of close association between these two communities have grown over the past three years and now constitute a major social and economic strength of each community.

More detailed socioeconomic information concerning Hoonah is provided in the Appendix (VI-C).



MOUNT BETHER. Located at the mouth of Game Creek, a few miles south of Hoonah, this community includes slightly over 100 residents. The principle economic base is agricultural, with 72 acres of privately owned and leased land under cultivation. Through extensive enrichment of this acreage, using kelp, shell, and refuse from the Hoonah fish cannery, crops have been sufficiently abundant to permit marketing of produce beyond what the community uses. Principle markets are Hoonah and Juneau, which is reached by the Alaska Marine Highway ferry stopping in Hoonah. Using a small community sawmill, Mount Bether residents have constructed their own homes, work buildings, and a large meeting hall (which also serves as a school, grades K-12).

The isolation of Mount Bether is increased by an extended tideflat. Access and egress is limited to high tide or a long hike across the mud flat. This situation poses a serious safety threat so that, on more than one occasion, helicopter evacuation of sick or injured residents has been required. In addition, marketing of agricultural products has proven very difficult. To supplement income, therefore, a number of Mount Bether residents have taken jobs or provide craft services in Hoonah. Besides supplementing income for Mount Bether residents, this relationship between the communities has provided Hoonah with important service workers, such as plumbers, electricians, carpenters, and others.

In the future, Mount Bether residents view community expansion as a key factor in the settlement's survival. Acquisition of additional land, to support existing residents and others who wish to join the community, may be possible through bidding on adjacent State selection lands. A second key factor is better economic returns on their existing agricultural lands. Improved access is necessary for this as well as other potential economic activities, eg. development of an aircraft mechanic service at the Hoonah airport, production of local lumber for construction and bridge planking, etc. A third key factor is providing for the safety and convenience of residents. For these principle reasons, the community supports logging and road construction in the Game Creek drainage, proposing to construct a road spur to this proposed logging road.

TENAKEE SPRINGS. The concerns of this community were of key importance in developing the 1976-81 ALP operating plan. Many issues and characteristics of the community are described in the final EIS for that operating plan and continue to be important considerations. The lifestyle preferred by Tenakee



Springs residents, for example, continues to depend upon isolation, simplicity, and enjoyment of the natural surroundings of Tenakee Inlet. Similarly, economic dependence upon subsistence and commercial fishing continues to be a key element in the community's opposition to increased timber harvest in the Inlet.

A logging camp was located at Corner Bay, southeast of Tenakee Springs and across the Inlet, during the 1976-81 operating period. Approximately ten families living in Tenakee Springs now rely on logging employment. This factor is of importance to the community's overall economic stability and to sustaining required school enrollment. Thus, many residents indicate that enough logging in the Inlet to sustain the Corner Bay camp during the 1981-86 period is desirable for the community.

Satisfaction of the community with 1981-86 operating proposals would appear to depend on the following factors: (1) continued operation of the Corner Bay camp, with no new camps developed in the Inlet; (2) no developed road connection into the community; (3) protection of key fish streams and estuaries in the Inlet; (4) maintenance of some bays within the Inlet in a natural condition for recreational enjoyment; (5) administration of logging activities in such a way as to limit the sight and sounds of development. Community concern is particularly focused on the Kadashan drainage, both for its high fisheries value and for its proximity to the community lying across the Inlet.

KAKE. The native community of Kake is located on Keku Strait on the western shore of Kupreanof Island, approximately 18 miles northeast of the nearest planned activity in Port Camden. Logging, fishing, and fish processing are dominant economic factors in this community of approximately 550 persons. In addition, the community depends to a major extent on a subsistence lifestyle in areas which include Kuiu Island. Response of citizens to the TLMP process indicates that the community considers management regulations and guidelines for LUDs III and IV developmental activities adequate to protect resource values and historical sites important to the community.





Water Use and Land Ownership

There are approximately 25 Forest Service special use permits issued for surface and spring water use in the study area. The only hydroelectric activity proposed is in the Game Creek drainage, for use by the community of Hoonah. A main haul road on the east side of the drainage appears to be in close proximity to this proposed project. Feasibility of the proposed hydroelectric development is being studied.

Land ownership status of each management area studied is summarized below. Appropriate negotiation for right-of-ways and proper notification of users have been undertaken. Details concerning these lands and Forest Service negotiations are available on file in the Supervisor's offices in Sitka and Petersburg.

FRESHWATER BAY: Six parcels of eliminated and/or patented ground; four special use permits; four 1906 Native Allotment Act claims; two claims under the Alaska Native Claims Settlement Act (ANCSA); one prospective hydroelectric power site; one selection by the State of Alaska. The one 1906 claim, both ANCSA selections, two special use permits, the hydroelectric site, and the State selection are directly affected by proposed developments.

WHITESTONE HARBOR: Fifteen special use permits; six 1906 claims; three nonpatented groups of mining claims; nine eliminated and/or patented parcels; two townsites; two ANCSA claims; and one trail. One patented piece of ground, three groups of nonpatented mining claims, both ANCSA selections, and the trail are traversed by the mainline road to Whitestone.

TENAKEE INLET: One special use permit and two patented parcels exist within the 15 Mile-Salt Lake Bay portion of the management area. None are crossed by roads. However, the patented lands (abandoned for several years) are in close proximity to the road location.

KELP BAY: One ANCSA selection exists within this management area. This is the secondary selection area for Angoon, withdrawn under Public Law 92-203 in response to Section 11 (a)(1) of the Alaska Native Claims Settlement Act. The native corporation has presently not selected any of this area.

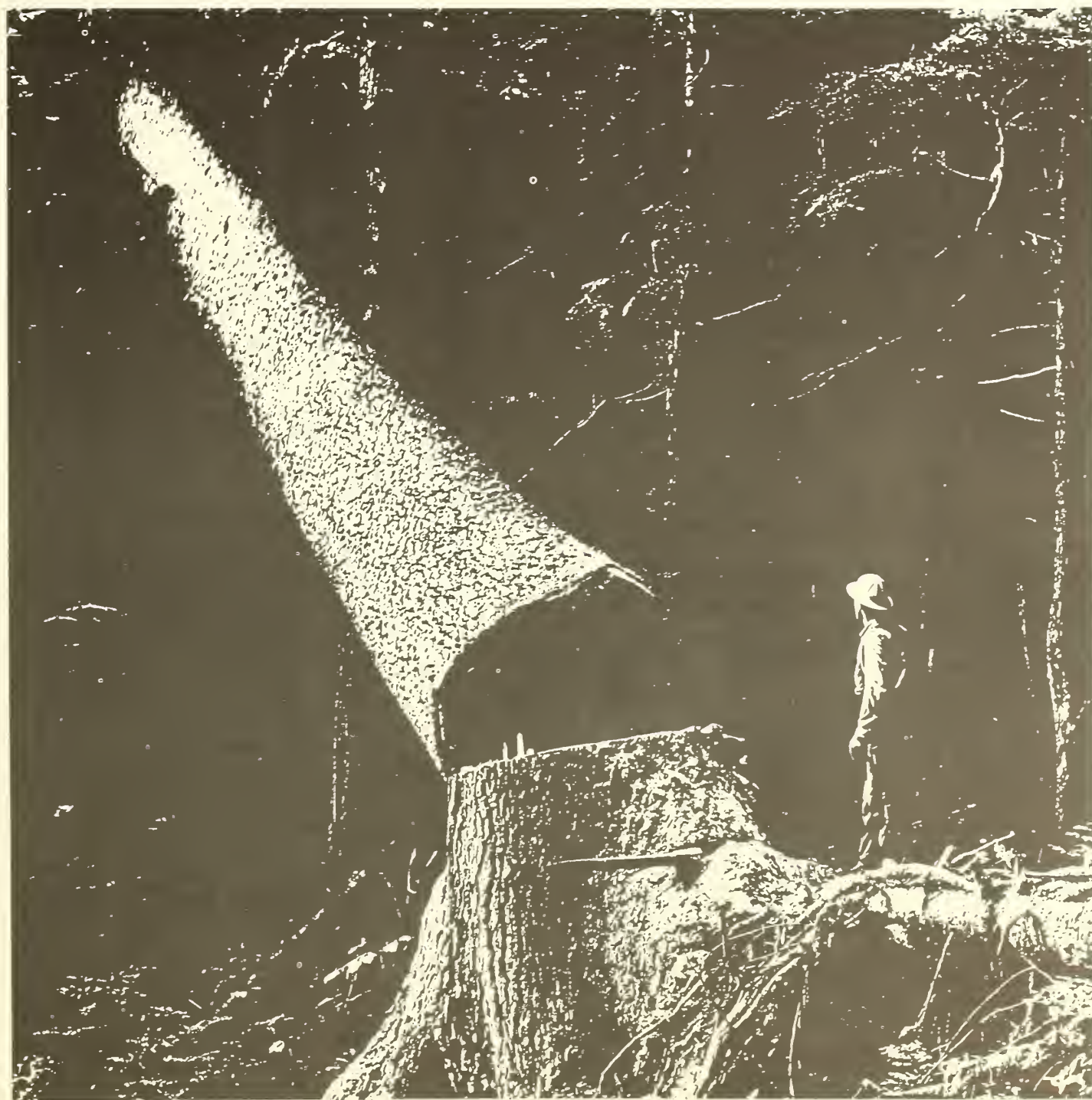
CORNER BAY: Within Trap Bay there is one 1906 claim and a Native historical site application. The

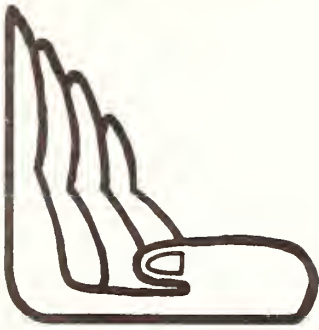
nearest timber harvest activity would be at least two miles north of these sites.

KADASHAN: One 1906 allotted claim and two special use permits. None are crossed by proposed roading, although the mainline road from Corner Bay comes within 1/2 mile of the ADF&G cabin/weir site and the 1906 claim.

EAST KUIU: One small parcel of patented land on the north side of Seclusion Harbor and twelve 1906 claims in the Port Camden area. One of the 1906 claims would be impacted by operating proposals.

III. Planning Alternatives and Recommendations





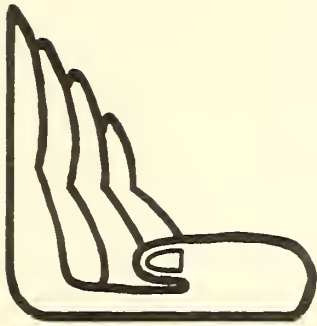
Decision Criteria

Decision criteria are established early in the planning process. While these criteria may be revised as necessary to reflect any changes in the planning situation, they serve an important purpose in assuring that alternatives based on different goals will be measured objectively against a uniform standard.

Decision criteria for alternatives in the 1981-86 operating plan were established by the staffs of the Chatham and Stikine administrative areas as a part of the interdisciplinary study plan. These criteria were presented to the public for review in October, 1978 (see Section IV. Consultation with Others).

The following decision criteria establish the constraints within which a recommended action may be identified:

1. The preferred alternative should provide an opportunity to meet contractual obligations.
2. The Forest Service should have the people, time, and dollars to implement the plan.
3. The economic costs should not exceed economic benefits.
4. The environmental, social, and economic costs should not exceed total benefits.
5. The preferred alternative should reflect expectations expressed in the public involvement process.
6. The preferred alternative must be within direction set in the Tongass Land Management Plan and must be within existing laws and regulations.



Alternatives Considered

Process to Formulate Alternatives

A study plan was prepared and approved in June, 1978. This study plan required an interdisciplinary process to design alternative harvest plans around decision criteria. The study plan also required that the interdisciplinary team identify the alternative which best met those criteria.

Interdisciplinary teams on the Chatham and Stikine administrative areas of the Tongass proceeded to identify operable timber, critical fish and wildlife habitats, visual management zones, and sensitive soils in those portions of the sale area where 1981-86 operations might occur. These features were displayed on color aerial photographs with stereoscopic capability and on two inch:mile maps with mylar overlays.

With this information, the core interdisciplinary teams created "paper plans" of proposed cutting units, road locations, camps, and log transfer sites. These proposed features were reviewed by each specialist to assess their conformity to the criteria and objectives of the study plan. Assumptions made in economic evaluations centered on road construction as the major factor in determining operating costs. It was determined that road construction would approximate \$130,000 per mile, and that a 2MMbm yield/mile of road would offset development costs and allow normal profit and risk allowances to produce a positive stumpage value.

Areas Considered

During the phase of modifying possible harvest plans for individual management areas, a number of areas were found to be undesirable for harvest during the 1981-86 period. In some cases, TLMP and the legislative process developed land use emphasis incompatible with harvest. In other instances, economic factors and best management practices led to the decision to defer timber harvest. Those areas identified for "no action" during the 1981-86 operating period were:

AREA

Tebenkof and Pillar Bay (Kuiu)

IDT CONCLUSION

Following investigation of potential log transfer sites and access routes, the area was deleted as the TLMP and legislative processes progressed.

LUD I and II areas from TLMP are not included in the ALP 1981-86 study. Most of these classifications were anticipated by the IDTs and affected areas deferred in initial planning phases.

Krestof Island	Since portions have been harvested, impacts on deer habitat will be reduced if reentry is deferred to later operating periods.
Fish Bay (Baranof)	Since portions have been logged the decision to defer reentry was made.
Range Creek (Baranof), Broad and Broadfinger Creeks (Chichagof)	Require extensive roading in relation to timber volume. Although these costs might be offset by more cost-effective areas, no such off-setting area is presently available and entry was deferred.
Appleton Cove and Saook Bay (Baranof)	Proximity to the Alaska Marine Highway and important wildlife values led to the decision to defer reentry into this area during the 1981-86 operating period.
Middle Arm, Kelp Bay (Baranof)	Difficult terrain with roading problems make deferral desirable.
Pond Island, Kelp Bay (Baranof)	For protection of important deer habitat, including winter range, deferral is desirable at this time.
South Arm, Kelp Bay (Baranof)	For management of extremely important fish, wildlife, recreational, and scenic values, deferral of harvest is desirable.
Upper Freshwater (Chichagof)	ALP has agreed to Tenakee Spring's request and will close the Sunny Cove log transfer site in 1980. No other feasible log transfer site is available at this time.
Port Beauclere (Kuiu)	Sufficient volume was found to be available in VCUs 416-420 (Management Area S0-9). The area can therefore, be deferred from harvest during this period.
Chicken Creek (Chichagof)	Entry in this drainage was deferred, pending resolution of the Sealaska ANSCA selection in the Humpback-Flynn area.
All VCUs on north Kuiu accessed in 1971-76 and 1976-81.	Decisions on the latter group were postponed pending a favorable determination of volumes available to meet the contract from an orderly and progressive expansion of access roads from Rowan Bay to other areas on Kuiu Island. This decision avoided having to deal with areas where land claims under ANSCA and the Native Allotment Act of 1906 are not yet resolved.
All A-frame timber operations	All areas requiring A-frame operation were deferred with anticipation that future market conditions will make the higher costs of A-frame logging cost effective.

Areas included in alternative timber harvest plans are:

Management Area

Freshwater Bay (LUDs III & IV)

Whitestone Harbor (LUD IV)

Tenakee Inlet (LUD III and IV)

Kadashan (LUD III)

Corner Bay (LUD IV)

Drainage

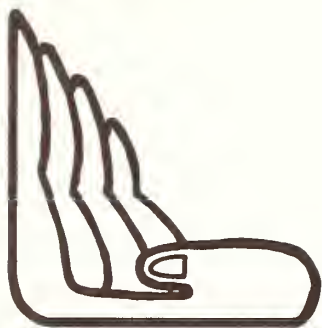
Freshwater, Hanging Valley, Pavlof Ridge, Kennel Creek, Seal, East Point, Game Creek.

Suntaheen, Gartina. Iyoutug

Salt Lake Bay, Fifteen Mile

Kadashan

Trap Bay, So. Passage Point



Crab Bay
(LUD IV)

Finger Creek

Kelp Bay
(LUD III and IV)

Catherine Island, Portage Peninsula

East Kuiu
(LUD IV)

Port Camden, Threemile Arm, Seclusion Harbor,
No Name Bay, Alvin Bay/Reid Bay

Description of Alternatives

A "no action" alternative is a required consideration in any environmental study under the National Environmental Policy Act of 1969. A "no action" decision would maintain the areas under consideration in their present largely roadless and undeveloped state.

Section 15(b) of the National Forest Management Act of 1976 (PL 94-588) validated the long term timber sale contracts in Alaska. The IDT recognized, therefore, that a "no action" decision on all management areas would violate this national direction. However, a "no action" alternative was considered individually for each management area, resulting in deferral of harvest in a number of management areas or portions of management areas. The specific "no action" decisions are presented in the text table of the previous section.

After the operating areas had been selected, three alternatives were developed and evaluated for the Chatham and four for the Stikine. Alaska Lumber and Pulp Company also prepared an alternative.

The following assumptions were considered essential and were incorporated in all Forest Service alternatives considered:

(1) The only timber harvest system to be considered that is not currently used in ALP operations would be a skyline system with 2,000 feet span reach.

(2) Units would be developed only where they do not block future access to other operable volume. Such blockage results when timber must be harvested (yarded) over second growth stands.

(3) In keeping with TLMP some timber was deferred from harvest to protect fish, wildlife, and other resource values. These identified retention zones should not be harvested until technology or timber economics allow harvest in these areas while protecting other resource values.

(4) Alternatives differ primarily by variations in harvest unit size, shape, and location. Management options emphasize timber harvest economics, environmental protection, or compromise actions. Large, concentrated harvest units, requiring limited roading, tend to improve economics. Smaller, dispersed harvest units are generally less impacting to amenity resources but reduce economic returns. In addition, small dispersed units may require additional roading, entry into additional areas, more camps and log transfer sites, and other activities which impact amenity resources.

Resource impacts can be avoided or lessened by adjusting road location and unit boundaries to avoid high impact areas. Such adjustments were made to develop compromise alternatives.



ALTERNATIVE # 1: This alternative emphasizes timber harvest economics through larger and more concentrated harvest units. Higher risks of adverse impacts occur than with other Chatham alternatives. Alternative #1 includes the following management areas: Whitestone Harbor, Freshwater Bay, Tenakee Inlet, Crab Bay, Corner Bay, Kadashan, and Kelp Bay. This alternative identifies 580 MMbm from the sampled area. Since only 395 MMbm is required from the Chatham management areas, some of the areas could be deferred to later entries. This alternative has an average unit size of 73 acres and 209 miles of road to provide



395 MMbm. By selecting the most cost effective management areas to provide the 395 MMbm, this alternative could be implemented without additional investment. Alternative #1 would harvest 41 percent of the operable volume identified in these management areas by the Tongass Land Management Plan. Resource impacts are discussed under Section III-D.

ALTERNATIVE # 2: This alternative represents a balance between timber harvest economics and environmental protection. Harvest units average 39 acres and 297 miles of road would be required to obtain 395 MMbm.

Although Alternative #2 contains some risks for adverse environmental impacts, the option represents a relatively high degree of assurance of meeting the Southeast Alaska Area Guide policies. This option was explored for the Whitestone Harbor, Freshwater Bay, Tenakee Inlet, Crab Bay, and Kelp Bay Management Areas. Only 348 MMbm (47 MMbm short of the needed 395) was identified in this option. To obtain 395 MMbm in the Chatham Area, additional management areas would have to be entered. The additional 47 MMbm could be obtained if the Kadashan and Corner Bay Management Areas were added to the plan. However, based on the sampled 348 MMbm, it is estimated that it would require about \$13 million additional funding for this alternative to provide 395 MMbm. Alternative #2 would harvest 30 percent of the operable volume identified in these management areas by the Tongass Land Management Plan. Resource impacts are discussed under section III D, "Effects of Implementation".

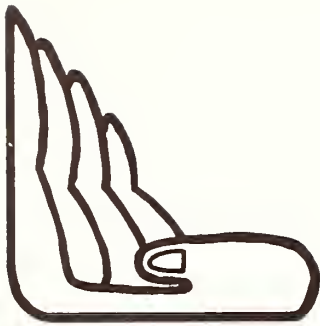
ALTERNATIVE # 3: This option was developed to emphasize resource protection under the guides of known best management practices (Chatham Area Project Guidelines 1/). Harvest units average 35 acres and 387 miles of road are required to access 395 MMbm. Since the Tongass Land Management Plan specifies that all timber volume (except that set aside for retention) must be harvested over a rotation to provide even flow/sustained yield, some adverse impacts were tolerated. Spreading impacts over several entries has fewer adverse environmental effects than harvesting

these areas all at once. Alternative #3 was developed for the Whitestone Harbor, Freshwater Bay,

Tenakee Inlet, Crab Bay, and Kelp Bay Management Areas. Only 270 MMbm (125 MMbm short of the required 395) was identified in this option. To obtain the needed 395 MMbm, entry into additional management areas would be necessary, including units previously listed for "no action" (page 31). Based on the sample (270 MMbm), the cost of implementing this option would be about \$25 million to provide 395 MMbm. Alternative #3 would harvest 22 percent of the operable volume identified in these management areas by the Tongass Land Management Plan. Resource impacts are discussed in Section III (table 9).

ALTERNATIVES 4 THROUGH 7: These alternatives display different timber harvest plans for the East Kuiu Management Area. Assumptions are: (1) total volume needed for the five-year period from the Kuiu Island contingency area is approximately 200 MMbm. This volume will sustain ALP's Kuiu operations at current experienced levels. (2) No options to exceed 200 MMbm (total) would be evaluated since they would require a substantial increase in ALP's Kuiu operation, possibly additional camps. This would act to the disadvantage of the Stikine Area's management capability to balance long and short term sale volume offering. (3) Approximately 70 MMbm will be "carried over" from the 1976-81 operating plan, leaving a balance of 130 MMbm to be selected from the Kuiu contingency area. (4) Subsequent operations would result in an orderly and logical expansion of current operations insofar as it is practical to maintain the focus of company operations and Forest Service administration at Rowan Bay. (5) Interdisciplinary teamwork would produce an acceptable balance of environmental and economic benefits, meeting the requirements and guidelines of the National Forest Management Act, Tongass Land Management Plan, and Southeast Alaska Area Guide. (6) A "Best Management Practices" indication of volume available to an initial entry in the East Kuiu Management Area is identified by the interdisciplinary team as approximately 240 MMbm. (7) The 130 MMbm selected from the study areas will be a product of the assessment of roading options, log transfer sites, environmental effects and costs. (8) No new camps will be developed. (9) The location of new log transfer sites will be based on the considered needs of all resources. (10) 1976 updated base year appraisal data is used for a comparison of the alternatives. (11) 1979 base year appraisal data will be used for the final rate redetermination. (12) Road access from Rowan Bay will be accomplished during the 1976-81 five-year operating period.

1/ Available from Chatham Area's Forest Supervisor's Office.



Alternative # 4: Timber access roads will be extended throughout the management area from Camden Peninsula, on the north, to Reid Bay. One hundred thirty MMbm will be selected for harvest. This alternative utilizes the existing camp and log transfer site at Rowan Bay and provides for the construction of an additional log transfer site in No Name Bay. Average unit size is 89 acres. Seventy-four miles of road are required.

Alternative # 5: Timber access will be extended throughout the management area from Camden Peninsula, on the north, to Reid Bay. One hundred thirty MMbm will be selected for harvest. The alternative utilizes the existing camp transfer at Rowan Bay. New log transfer sites will be located in No Name Bay and Port Camden. Average unit size is 89 acres. Seventy-five miles of road are required.

Alternative # 6: Timber access roads will be limited to serve a smaller area immediately south and east of the area included in the 1976-81 operating plan. Camden Peninsula south to approximately the headwaters of Seclusion Harbor. 130 MMbm will be selected for harvest. Only the existing camp and log transfer site at Rowan Bay is used in this alternative. Average unit size is 90 acres. Sixty-two miles of road are required.

Alternative # 7: Timber access roads will be limited to serve a smaller area immediately south and east of the area included in the 1976-81 operating plan, Camden Peninsula south to approximately the headwaters of Seclusion Harbor. 130 MMbm will be selected for harvest. The existing log transfer site at Rowan Bay would be used. A new log transfer site will be located in Port Camden. Average unit size is 90 acres. Sixty-four miles of road are required.

Alternative # 8: Alaska Lumber and Pulp Co., Inc. 1981-86 Logging Proposal.

The Unit Design Criteria presented by ALP as the basis for their proposal was:

1. Unit Size

Attempt to keep units approximately 100 acres in size, \pm .

2. Minimum Volumes

- Hi-lead area use 15m per acre minimum
- Skyline area use 25m per acre minimum

3. Maximum Yarding Distance

- Hi-lead to 1000 feet \pm 200 feet
- Skyline to 1800 feet \pm 200 feet

4. Fish Protection

- USFS will have photo and/or on the ground review.
- Log to one side of creek only per entry - assuming two entries.
- Avoid slide prone areas that could slide into a fish stream.
- All units photo reviewed by consulting biologist.
- Log to no more than 25% of the banks of major fish streams, pending on-site review.

5. Wildlife Protection

- Avoid known eagle trees on photo and field layout.
- Provide wildlife corridors from ridge top to valley bottoms and along at least one side of valley bottom streams, taking natural existing corridors and at least two entries into account.
- Avoid concentration of units in deer winter ranges, especially old growth beach fringe.
- Leave a beach fringe buffer strip along all beach where timber fringe exists.
- All units photo reviewed by consulting biologist.
- Attempt to reduce unit size and/or number on south aspect slopes in areas considered deer winter and intermediate range.

6. Landscaping

- Avoid straight lines using natural timber types and openings to obtain wind firm boundaries.
- Leave strips should be located so as to allow finger ridges to express themselves - keeping windfirmness of leave trees in mind. Avoid excessive or large beach units especially on ferry routes.

7. Leave Strips

- Attempt to leave 1000 feet using windfirmness and natural wildlife corridors when possible.
- Wider or narrower strips will be used when it appears necessary to obtain a windfirm leave area, especially when the leave strip is perpendicular to strong winds.



c. Leave strips are potential future logging units; therefore an attempt has been made to leave logical settings.

8. Soils Protection

a. Attempt to avoid excessively steep slopes especially when dissected with V-notches.

b. USFS specialists will have photo and/or on the ground review.

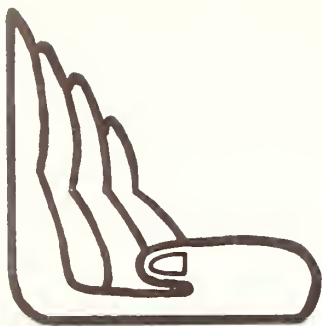
9. Archeological Sites

a. Will be protected.

b. Avoid location of road and units on known archeological sites.

c. USFS specialists will have photo and/or on the ground review.

This alternative provides 554 MMbm from the Whitestone Harbor, Freshwater Bay, Tenakee Inlet, Kadashan, Trap Bay, and East Kuiu Management Areas. Implementation of this plan would require \$4.3 million in supplemental funding. This alternative would harvest 28 percent of the operable volume identified in these management areas identified by the Tongass Land Management Plan. Resource impacts are addressed in Section III-D.



Effects of Implementation

Effects Similar in Alternatives 1-3 1/.

a. Soils

Impacts on soils through timber harvest will occur. Increases in soil erosion rates and decreases in soil productivity, due to mass wasting and soil surface disturbance, may result.

Soil mass movement is a significant erosional process under natural conditions. Likelihood is increased following timber harvest, due mainly to increases in windthrow and reductions in soil binding strengths resulting from the deterioration of tree root systems.

V-notches can pose a serious problem during timber harvest and road construction. V-notch sideslopes are susceptible to considerable surface erosion and to mass failure due to naturally steep sideslopes. Soil material entering V-notches is often rapidly transported into larger streams. Road construction near V-notches requires special consideration in order to minimize erosion.

Soil erosion will be increased where mineral soils are exposed, surface drainages altered, and water runoff concentrated. There is, however, some question of the relative proportion of this increase to the natural erosion rates which exist. Most soils within the study area are naturally resistant to surface erosion due to an overlying organic layer. This organic mat is highly permeable and water movement generally occurs as subsurface flow. Overland flow is rare except in established stream channels.

Harvest areas adjacent to streams will be reviewed by a soils scientist and special harvest techniques (eg. tractor logging over snow) or grass seeding of bare areas, prescribed where necessary.

Some planned clearcuts are designed to abut brushfield areas. Harvest of trees adjacent to snowslide areas may cause their expansion. This could result in a loss of productive timber area. This problem can be alleviated by leaving timber at the adjoining edge. Areas planned for

harvest that are adjacent to brushfields will be reviewed by a soil scientist, and mitigating actions prescribed where necessary.

Timber harvest should increase short-term nutrient availability and potential soil productivity. Soil ecosystem classifications have been made over most of the study area, and timber producing potential is known for each soil type. This information provides the opportunity to manage timber in order to produce better future stands on high soil productivity sites. This could allow future timber harvest on a smaller, and less sensitive, land base. A failure to employ this information during this timber harvest plan will likely not be evident during this operating period, or even this rotation; however, the impact of overlooking soil ecosystem data in harvest/timber management planning will reduce the long-term value of the National Forest.

b. Water Resources

Timber harvesting activities impacts both surface water quantity and quality. Harvesting removes most of the transpiring plants in the harvested area, allowing soil water to be near or at field moisture capacity. A given storm may then result in a greater runoff, since the soil water storage component is usually satisfied. The hydrologic response and peak discharge may increase. Often summer low flows may be increased by this additional soil water.

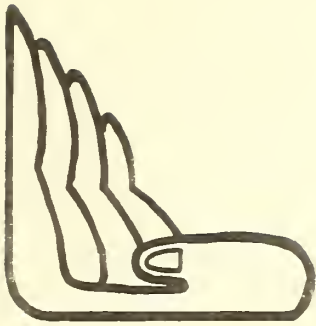
Timber harvesting will affect water quality in several ways. Suspended sediment concentrations and frequency of occurrence will increase over the natural erosional-depositional processes. Summer water temperatures may increase during low flows when streamside vegetation is removed, depending on cutting unit shape, aspect, solar radiation, and stream bottom material type. Conversely, winter stream temperatures may decrease and form anchor ice which would decrease flow within the gravel bed.

Water chemistry will be affected. This may prove beneficial by increasing nutrient concentrations which increase the stream's primary productivity.

c. Air Quality

Harvesting and logging activities will not result in any significant differences in impacts to air quality stemming from any alternative (except

1/ Detailed analysis of effects is available in Specific Studies Reports on file in the National Forest Management Office.



"no action" in all management areas). Although the sawmills served by the ALP long term sale do not require full operation to maintain processing, it is assumed that air quality impacts will remain constant throughout the operating period.

Within the timber harvesting areas, operation of camps, machinery, road equipment, and blasting will introduce air pollution of short term duration and at levels similar in all alternatives.

d. Silviculture

The majority of the stands proposed for harvest during this period are overmature (200 -400 years old). For purposes of increasing the timber resource on a limited land base allocated for harvest, it is advantageous to convert these stands to new growth. Young-growth stands produce gross annual cubic-foot growth at a rate 3.36 times that of old-growth stands. 1/ This objective of enhancing timber production sites through silvicultural practices reflects TLMP direction and assumes enhancement activities at future intervals. See discussion of Recommended Action (Section III) for proposed Silvicultural practices.

An additional silvicultural consideration is the design of cutting units to minimize blowdown and mistletoe infestation.

Vegetational succession will be altered by harvest in all alternatives. Information on forest succession and impacts is presented in the Forest Ecosystem of Southeast Alaska: 7. Forest Ecology and Timber Management (USDA -Forest Service Technical Report PNW-25).

e. Wildlife

Timber operations in southeast Alaska cannot be accomplished without causing ecological changes in wildlife habitat both at the time of harvesting and throughout the life of the rotation (100-100 years). The degree of effects varies between species according to the successional states occurring after cutting. Some wildlife

species may benefit from these changes while others experience adverse impacts. The magnitude of impacts depends upon the location, size, timing, shape, and distribution of the clearcuts (Leopold and Barrett, 1972). The extent of associated developments, such as roading, log transfer sites, camps, and rock pits, also determines impacts on wildlife.

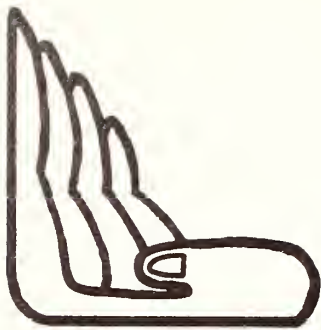
For some groups of wildlife, such as certain small mammals and birds, alteration of vegetation results in a change of species diversity. While some wildlife species benefit from modifications of the existing habitat, many of the species in southeast Alaska are most adapted to old-growth spruce-hemlock stands. Converting these stands to second growth generally reduces the habitat productivity for these wildlife species.

Sitka black-tailed deer are one of several species dependent on old-growth timber. The continuing cycle of regeneration and death of individual trees in the climax, uneven-aged spruce-hemlock stands provides food and cover which is optimum for the maintenance of deer populations in this, the northern limit of their range. These mixed-aged mature forest have a greater variety of evergreen forbs and palatable shrubs than even-aged, submature forests which exist after logging. Moreover, in winter periods, climax forests provide the greatest protection from snow accumulation, making forage more available.

Forage in cutover areas is unavailable for deer use during periods of deep snow accumulation (Bunnell, 1979; Weger, 1977). Studies in coastal forests of southeast Alaska and British Columbia show that harvested areas (including second growth stands) receive substantially less deer use throughout the year than the old growth stands (Hebert, 1979; Jones, 1975; Schoen, 1978; Schoen and Wallmo, 1979). Harvesting timber at lower elevations has a potential of adverse impact because of winter concentrations of deer in these areas (Barrett, 1979).

As a means of insuring protection of critical wildlife habitats (those requiring the highest percentages of habitat to be maintained), retention areas have been identified in all alternatives, within which no timber units have been planned. Retention areas exist primarily to protect critical deer winter range and estuarine zones. However, other wildlife, fish, and amenity resources accrue benefits

1/ USDA Forest Service General Technical Report, The Forest Ecosystem of Southeast Alaska, #9 - Timber Inventory, Harvesting, Marketing, and Trends, 1975.



f. Fish

The harvest of timber poses various degrees of effects on fish habitat and fish production. The Forest Service recognizes this and believes that timber harvest plans, consciously developed and carried out, can reduce many of the adverse impacts. Logging in Fish Habitat Sensitivity Zones (FHSZ) can be expected to produce more impacts than logging in Fish Habitat Management Units (FHMU); the risk of impacts in FHSZ is greater than in areas that do not contain fish habitat.

Change in the stream ecosystem will occur when stream bank vegetation is cut. Stream biota, including fishes, have evolved utilizing the streams physical and chemical characteristics; and they are adapted to their terrestrial, as well as their aquatic, environment. Most of the energy inputs to forest streams enter as organic detritus from the terrestrial system. Terrestrial vegetation also provides streambank stability, acts as a sediment and logging debris filter, and helps regulate temperature regimes and the amount of sunlight reaching the stream. Removal of riparian timber will have a significant influence on the stream ecosystem, ultimately affecting fish and benthic macroinvertebrate species diversity and total biomass. The ecosystem will reestablish itself after streamside regrowth occurs.

Impacts can be expected to be less when only one side of a stream is cut. If streamside leave strips are provided, impacts are expected to be minimal. All alternatives contain some harvest on one or both sides of the stream in salmon spawning habitat.

A stream located within a clearcut may be expected to have more bank disruption and riparian vegetation removal than a stream outside a clearcut. Some streams are sensitive to changes in winter stream temperatures induced by streamside harvest. Induced changes in stream temperatures by removal of riparian vegetation may be detrimental to fish production.

The number of drainage structures and the potential for impacts is approximately proportional to the length of road within a watershed. High sediment levels from logging roads have been shown to adversely affect fish, benthic macroinvertebrates, and their habitat.

The quantity, quality and sensitivity of fish habitat to development are subjects for field review. The degree and extent of habitat protection in these areas will depend on field administration of IDT recommendations. A fishery biologist will be a member of any IDT that investigates fish habitat. All Fish Habitat Sensitivity Zones and Estuarine Sensitivity Zones will be reviewed for specific stream protection prescriptions.

Prescriptions that are necessary to mitigate impacts or to monitor activities may be recommended by the IDT. A fisheries biologist will be present when leave strips are to be laid out for fisheries protection as well as when any impacting activities to fish habitat occur.

The Forest Service is involved in various programs which enhance fish habitat and compensate for impacts of timber harvest. Construction of

fish ladders over stream barriers to fish migration, stream debris removal, lake enrichment to improve sockeye salmon production, lake stocking to utilize barren lakes for coho salmon rearing are such programs. Several enhancement sites occur within the 1981-86 management areas (see Section II). More information on these planned projects is available from the U.S. Forest Service Fish and Wildlife Program Managers in Sitka and Petersburg.

g. Visual and Recreation

The Forest Service visual and recreational management program is outlined in USDA Agriculture Handbook No. 462, Volume Two, Chapter One - The Visual Management System; and Forest Service Manual 2380. This program establishes the scenery and recreational opportunities as forest resources.

Timber harvest operations cannot be accomplished in southeast Alaska without an adverse impact on the inherent natural qualities of the landscape in many cases. The degree of impact is dependent upon the location, size, shape, and intensity of clearcut harvest units and associated developments such as camps, roads, rock pits, and log transfer sites. Cutting units located adjacent to major travel routes and recreation areas would have a greater adverse impact due to the associated high viewer sensitivity than those located in areas less frequently seen.

Consequently, cutting units are designed to harmonize with the natural landscape when viewed as background



from Alaska Marine Highway ferries and tourships. In some areas, this landscape design has also been followed along small boat waterways. When such cutting units are visible from the water, eg. the canoe route in Port Frederick, visual quality is reduced.

Harvest operations result in both short-term and long-term adverse impacts. Short-term impacts result from the sharp visual contrast in color and texture between harvested areas and the existing landscape. Long-term adverse impacts result from loss of natural qualities inherent in the landscape through successive entries in future operating periods.

Timber harvest operations expand opportunities for dispersed recreation in southeast Alaska. Logging roads can be designed to provide recreationists with convenient access to inland areas previously inaccessible. Thus, the opportunities for hunting, fishing, hiking in scenic alpine areas, gathering edible plants, and other recreational pursuits would be enhanced.



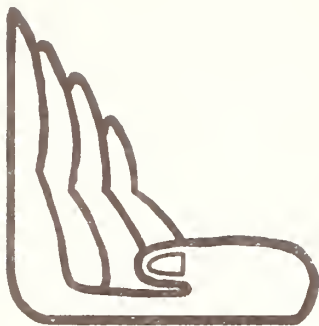
h. Cultural

There are no planned impacts on cultural resources. Because complete research on all proposed areas is not feasible, a series of steps has been established under which resources can be protected under all alternatives. Most of the proposed log transfer sites have been examined on a reconnaissance level; those at which no cultural resources were found have been given clearance. Intensive and intermediate surveillance of other sites will be conducted when harvest areas are determined.

In areas where construction with subsurface disturbance will take place, impact on uncharted cultural sites is highly possible. If a cultural site is found, immediate actions will be taken to avoid impact. Areas where clearcutting is proposed are of less concern since below-ground disturbance is minimal. Archeological survey of the chosen alternative will be conducted as shown in Table 2

Table 6: Archeological Survey Requirements

		ARCHEOLOGICAL POTENTIAL		
		HIGH	MODERATE	LOW
Type of Impact	Direct	Road Corridors	Complete Survey	Sample Survey
		All Other Specific Sites of Disturbance	Complete Survey	Complete Survey
	Indirect	Cutting Units and Other Dispersed Impact	Sample Survey	Sample Survey



Effects Similar in Alternatives 4-7 1/.

The environmental effects of alternatives 4 through 7 are similar in the following respects:

- a. Harvesting of approximately 130 MMbm in the East Kuiu Management Area will have the same approximate effects on physical factors (principally soil and water) and on vegetation. Size, shape, and density of individual proposed harvest units do not vary substantially between alternatives 4 and 7 except with respect to location. The general effects for soils, water, air, silviculture, wildlife, fish, visual, recreation and cultural resources are appropriate to the "Similar Effects" described for all Chatham Area Alternatives.
- b. All alternatives emphasize reducing effects on wildlife habitat. Road location and cutting unit placement and design were analyzed in all situations where the retention of wildlife habitat was an important factor. Where neither project design nor management constraints were seen as fully sufficient to avoid or mitigate the loss of highly important habitat, monitoring projects were recommended to determine the value of mitigation procedures and to aid in expanding knowledge on the effects of timber harvest.
- c. All proposals are subject to further review by appropriate specialists where there is an identified need for their participation in locating proposed harvest units on the ground.
- d. All alternatives emphasized reducing effects on fisheries and estuarine habitat. Roads, stream crossings, units, landings and potential log transfer sites were located and discussed by the team on the ground. Detailed qualitative stream surveys were completed by Forest Service and Alaska Fish and Game biologists; those areas of most importance for the spawning and rearing

of anadromous and resident salmonids were located. Also designated were those streams where elimination of natural migration barriers could potentially open significant quantities of stream channel to spawning and rearing anadromous fish. Potential log transfer points were examined and compared by National Marine Fisheries and U.S. Fish and Wildlife Service scuba divers.

Harvest unit location, design and logging methods, stream crossings, and road locations incorporate the best available fisheries habitat protection measures. In addition, the plan requires further examination and prescription by teams of fisheries biologists, hydrologists, soil scientists and logging systems specialists in specified harvest units where fisheries values and risk of impact are the highest. Removal of selected areas of streamside canopy and low levels of sediment from a heavily used road system can be expected to influence the complex biological regime of adjacent streams, but the diligent application of site specific stream protection measures during the layout and administration phases should reduce this influence to a minimum.

e. The proposed timber harvest activity and associated development will not preclude the opportunity for the future development of recreation facilities compatible with Land Use Designation IV areas should there be a demand.

f. Proposals do not directly affect any adjacent communities except Rowan Bay and Kake.

g. All alternatives provide approximately 2 MMbm of harvest per mile of road. While it is not expected that supplemental road construction funds would be required, investment needs are projected in Tables 1 and 2 based solely on volume per mile calculations.

The effects of Alternatives 4-7 on soils, water, air, and silvicultural resources are, in general, similar to those of Alternatives 1-3. Average harvest unit sizes are similar in all Stikine Area alternatives. System road lengths are greater in Alternatives 4 and 5 (about 10 miles) but should not appreciably affect those resources. All road locations and harvest unit layouts were determined so as to minimize resource impacts and provide adequate mitigative measures when impacts are unavoidable. Major differences among the alternatives were simply the choices of planned units and roads to provide 130 MMbm from an overall plan for 240 MMbm. Thus, the effects are, by design, similar throughout the alternatives.

1/ Detailed analysis of effects is available in Specialists' Reports on file in the Stikine Forest Service office.



Effects of Alternatives

Alternative 1

a. Soils

Some slopes having high mass failure potentials would be harvested if this plan were implemented. This alternative also contains the greatest number of potential slope failures which could enter fish streams. There are also a number of units containing V-notches or on alluvial flood plains or fans that will be hard to adequately protect from surface disturbances. Because these problems are concentrated in the watersheds, sediment introduction into individual streams could be high.

There are fewer total miles of road than in Alternatives 2 or 3, but within the drainages entered roading is similar.

b. Water

Concentration of harvest units in the highest volume timber has resulted in more extensive harvesting to the stream edge than in Alternatives 2 or 3. Canopy removal on both sides of the stream may result in greater accumulation of logging debris in the stream. Canopy removal on streams with a south to southwest exposure may increase water temperature during the summer months. Conversely, the winter temperature of any stream may be decreased by canopy removal.

Larger and more concentrated harvest units in this alternative may result in increased runoff.

Roads have been identified as the major source of suspended sediment from forest management activities. This alternative would require the least amount of roading.

c. Silviculture

This alternative contains the largest average unit sizes and, therefore, provides for the best mistletoe control and lowest probability of timber loss through blowdown.

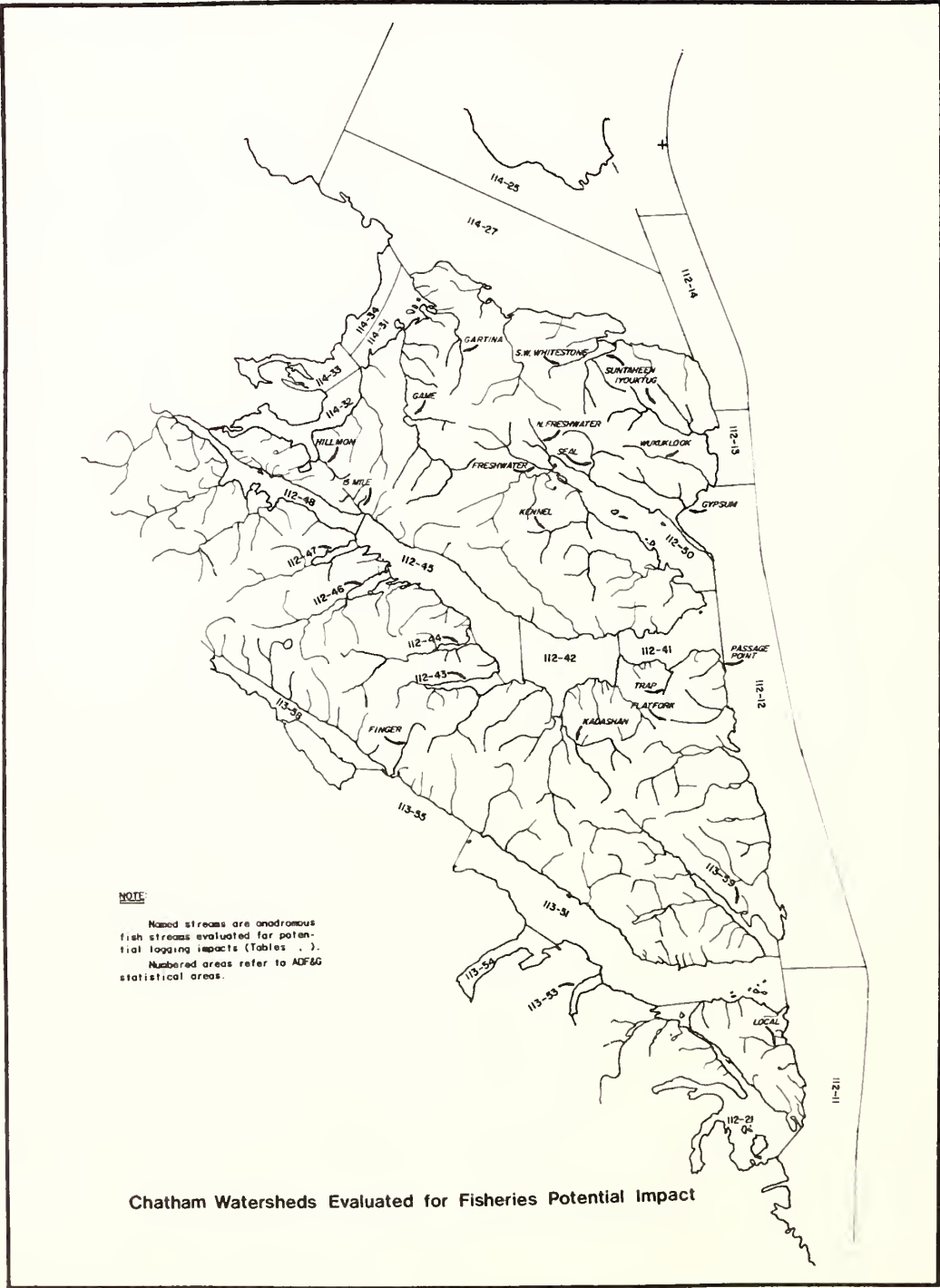
The large, concentrated units encourage better yarding and haul costs.

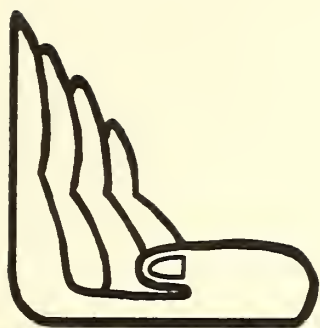
d. Wildlife

Alternative 1 poses the greatest potential for adverse impact to wildlife through the largest average unit size (about 73 acres) and the closest proximity of units of any of the alternatives. Most of the units are separated from each other by small leave strips, often inadequate as wildlife travel corridors because of small size or physical barriers. In addition, many strips may be susceptible to future windthrow which will lessen their value for most wildlife. In reality, many Alternative 1 units should be examined as groups or clusters of units with potential impacts comparable to single large units. The cumulative impacts of such harvesting could result in the reduction of localized populations of those animals dependent on the old-growth forest such as deer, marten, and certain small mammals and birds both immediately after cutting and for the life of the rotation. This type of harvesting also reduces habitat diversity and thus lowers the quality of the overall wildlife habitat. In addition, this alternative has the greatest number of individual units with a high probability of adverse impact on wildlife. This alternative includes units in deer winter range; in close proximity to estuarine flats or otherwise encroaching on sensitive or critical wildlife habitat zones; and units that block natural travel corridors.

e. Fish

In preparing this alternative fisheries habitat protection measures were employed to avoid only the most severe adverse impacts. Fish habitat sensitivity zones were not generally avoided and more fish habitat sensitivity zones were planned for harvest than any other alternative (see table 3, page 43, and table 16, page 72). Timber was planned for harvest along one or both sides of mainstem streams important for salmonid spawning and rearing, again the highest of any of the alternatives. Some flood plains and areas with a high density of rearing streams were planned for harvest. A high percentage of fish habitat management units were planned for logging. If Alternative 1 were implemented, projected impacts to the fishery resource would be the highest of the three Chatham alternatives. Some of the potential impacts could be lessened by intensive participation of a biologist during unit layout, location of roads, log dumps, and landings. The biologist's input would be necessary in all phases of the timber plan and is expected to be





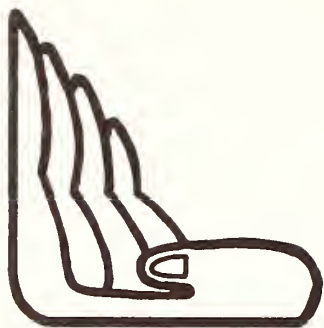
KEY FOR TABLES FISHERIES DATA PER WATERSHED

Column	Data Provided
1	The watershed areas were determined with a polar planimeter on 1:63,360 maps.
2	Percent of watershed proposed for logging is area in a watershed to be logged divided by the total area of that watershed.
3.	Length of road within each watershed was measured from 1:63,360 expanded scale maps.
4.	Total stream length comprises known and suspected fish habitat above and below barriers to fish passage. Stream lengths were measured on 1:63,360 maps.
5 & 6	Average number of bridge and culverts on the proposed road system that will cross streams, tributaries, and drainage areas based on historical patterns in the Chatham Area. One mile (1.61 km) of road contains on the average: 7 corrugated metal pipe drainage structures (culverts); 4 minor bridges (native log stringer type, 6-15 m long.); and one major bridge greater than 15 m long.
7.	Percent of total stream length with proposed logging along either one or two sides of the stream.

8. Percent of total stream length proposed to be cut on both sides.
9. Total acreage of Fish Habitat Management Units (FHMU), estimated from inspection of each proposed cutting unit on aerial photographs. In the context of this study, a FHMU is an area, within a proposed cutting unit, that contains salmonid (resident and anadromous) fish habitat and uplands in which development will likely affect fish habitat.
10. Percent of the total area proposed for logging that comprises FHMU.
11. Total acreage of Fish Habitat Sensitivity Zones (FHSZ) estimated from inspection of each proposed cutting unit on aerial photographs. In the context of this study, a FHSZ is an area, within a proposed cutting unit or at a bridge site, that contains salmonid (resident and anadromous) habitat that is important or critical for fish production and/or sensitive to development activities.
12. Percent of the total area proposed for logging that comprises FHSZ.
13. Numbers appearing in tandem (ie. 7/14) indicate value for pre-1981 logging vs. value by the end of the 1981-86 operating period.

Table 7 - Effects of Alternative #1 on Fish Habitat.

Stream Name	ADF&G Number	Watershed Area	% Harvested	Road Length (KM)	Stream Length (KM)	Number of Bridges	% of Stream cut on 2 sides	% of Stream cut on 1 or both sides	Acres cut in FHMA	% of Harvest in FHMA	Acres cut in FHSZ	% of Harvest in FHSZ	Number of Culverts
Kadashan	112-42-25	59.2	11	--	22.8	--	28	38	1240	79	279	18	--
Freshwater	112-50-30	101.3	3	22	44	69	2	4	126	16	43	6	97
Game Creek	114-31-13	128	12	54	45	168	9	42	1642	44	527	14	235
Kennel Creek	112-50-20	33.8	7/14	11	11.2	34	0/11	4/24	0	0	0	0	48
Flat Fork	112-12-34	20.2	14	--	10.1	--	24	27	375	52	166	23	--
Suntaheen	114-27-15	35.7	16	22	12.3	66	0	50	610	44	242	18	92
Seal Creek	112-50-38	30.0	12	11	13.1	36	20	27	234	26	47	5	50
Gartina	114-31-9	21.0	31	23	10.0	71	3	18	571	36	127	8	99
Local Creek	112-11-15	16.8	20	--	4.8	--	18	31	216	26	31	4	-
Finger Creek	113-55-1	19.9	12.7	--	6.0	--	0	13	87	14	41	2	--
N. Freshwater	112-50-32	37.6	4.6	3	7.1	11	0/4	28/43	66	29	17	5	15
S.W. Freshwater	114-27-18	15.0	22	11	0	33	0	35	453	56	124	15	46
Hillmon	114-32-16	9.7	17	5	4.6	16	0	4	32	8	3	1	22
Passage Point	112-41-1	7.0	21	--	3.3	--	45	45	92	26	22	6	--
5-Mile	112-45-1	12.5	9	5	4.9	16	0	0	0	0	0	0	22



more important and time consuming than in any of the other alternatives. The potential for significant impacts to the fishery resource is still high if this alternative is implemented due to the possibility of management error, unforeseen natural occurrences, and imperfect implementation or inability to use best management practices.

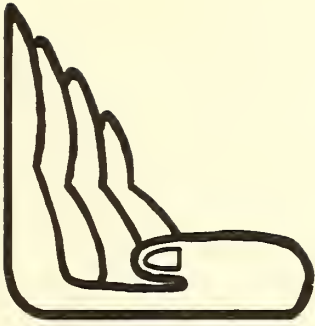
f. Visual and Recreation

The proposed harvest and related management activities in Alternative 1 would have a higher adverse impact on the aesthetic quality of the management areas included than other alternatives. The proposed Visual Quality Objective (VQO) of maximum modification fails to manage the visual resource by overlooking established recreational use patterns and the aesthetic qualities of the natural landscape.

There are both short-term and long-term potential negative effects associated with this alternative. Short-term effects would result from the intense visual contrasts in color and texture following timber harvest. However, this impact could be significantly reduced in highly sensitive areas by the burning of slash and debris remaining in the harvest areas. Long-term effects would result from the loss of the inherent natural qualities of the landscape associated with the intensity and size of proposed clearcut harvest units. Many of the proposed units in the Whitestone Harbor, Freshwater Bay, and Tenakee Inlet Management Areas would be classified as unacceptable modification of the natural landscape, thus failing to meet even the proposed VQO of maximum modification.

The positive effects associated with this alternative are derived from the proposed logging roads throughout the operating areas. These roads would provide access to interior land areas, thus expanding opportunities for dispersed recreation.





Alternative 2

a. Soils

Some slopes having high mass failure potentials would be harvested by this plan. However, very few of these would have direct impact into fish streams. The probability of a mass failure into a fish stream is much lower than in Alternative 1. There are about as many areas containing sensitive V-notches as in Alternative 1 but fewer total acres of floodplain or alluvial fans. Soil erosion losses should be similar to Alternative 1, but because units are dispersed and the high potential slide areas located only where they will not enter streams, impacts on fish habitat and water quality are expected to be lower.

b. Water

Timber harvest is planned in smaller units than Alternative 1 and would reduce the need to harvest streamside timber. This would help maintain the stream integrity. Timber and other vegetation left undisturbed along the stream in windfirm situations may reduce logging slash from entering the stream and could maintain streambank stability. Leave strips will moderate water temperatures and filter sediment from runoff waters.

c. Silviculture

This alternative minimizes the utility of timber harvest for mistletoe control. Smaller units expose more area for blowdown. Since more landings are needed, yarding costs would exceed those in Alternative 1. Haul costs will be somewhat higher than in Alternative 1.

d. Wildlife

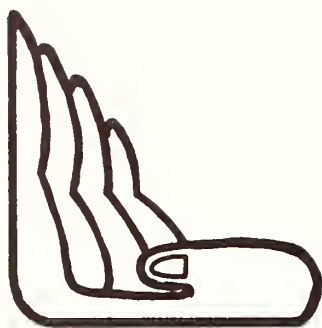
This alternative has the second smallest average unit size (about 40 acres) and the second largest number of units of any of the alternatives. This is a result of dividing some of the larger units of Alternative 1 into smaller units. Another feature of this alternative is the irregular shape of units with fingers of "leave" vegetation that extend into the units. This results in more "edge" occurring per given acre of clearcut. There is a greater mix of vegetative types (and, therefore, habitat). Habitat diversity is better maintained with this harvest approach than with the more concentrated approach of Alternative 1. This

alternative proposes fewer units with potential for adverse impacts to wildlife habitat than in Alternative 1 but enters management areas that are deferred in Alternative 1. This would mean construction of more timber related facilities during this five-year operating period; as is considered in the discussion of Alternative 3, to defer logging in these areas serves only to postpone the development activities until a later operating period. Dispersal of timber operations over time and space reduces the localized impacts and provides for more habitat diversity.

e. Fish

In Alternative 2, Fish Habitat Sensitivity Zones were avoided in some areas but entered in others. Few streamside leave strips were included. About 12 percent of stream lengths were cut along both banks which is less than Alternative 1 but much greater than Alternative 3. Table 4 displays stream-by-stream differences. Some important flood plains were protected in areas where soil erosion hazards are high; others were planned to be harvested. Projected impacts to fish habitat are expected to be intermediate between Alternative 1 and 3 if this alternative is implemented. The need for biologist participation is expected to be less than for Alternative 1 but greater than for Alternative 3.





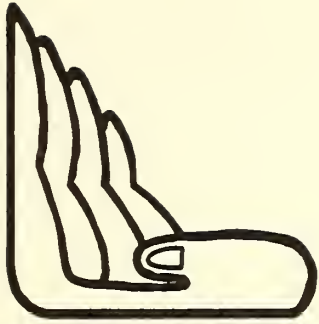
KEY FOR TABLES FISHERIES DATA PER WATERSHED

Column	Data Provided
1	The watershed areas were determined with a polar planimeter on 1:63,360 maps.
2	Percent of watershed proposed for logging is area in a watershed to be logged divided by the total area of that watershed.
3	Length of road within each watershed was measured from 1:63,360 expanded scale maps.
4	Total stream length comprises known and suspected fish habitat above and below barriers to fish passage. Stream lengths were measured on 1:63,360 maps.
5 & 6	Average number of bridge and culverts on the proposed road system that will cross streams, tributaries, and drainage areas based on historical patterns in the Cnatham Area. One mile (1.61 km) of road contains on the average: 7 corrugated metal pipe drainage structures (culverts), 4 minor bridges (native log stringer type, 6-15 m long.), and one major bridge greater than 15 m long.
7	Percent of total stream length with proposed logging along either one or two sides of the stream.

8. Percent of total stream length proposed to be cut on both sides.
9. Total acreage of Fish Habitat Management Units (FHMU), estimated from inspection of each proposed cutting unit on aerial photographs. In the context of this study, a FHMU is an area, within a proposed cutting unit, that contains salmonid (resident and anadromous) fish habitat and uplands in which development will likely affect fish habitat.
10. Percent of the total area proposed for logging that comprises FHMU.
11. Total acreage of Fish Habitat Sensitivity Zones (FHSZ) estimated from inspection of each proposed cutting unit on aerial photographs. In the context of this study, a FHSZ is an area, within a proposed cutting unit or at a bridge site, that contains salmonid (resident and anadromous) habitat that is important or critical for fish production and/or sensitive to development activities.
12. Percent of the total area proposed for logging that comprises FHSZ.
13. Numbers appearing in tandem (ie. 7/14) indicate value for pre-1981 logging vs. value by the end of the 1981-86 operating period.

Table 8 - Effects of Alternative #2 on Fish Habitat.

Stream Name	ADF&G Number	Watershed Area (KM ²)	% Harvested	Road Length (KM)	Stream Length (KM)	Number of Bridges	% of Stream cut on 2 sides	% of Stream cut on 1 or both sides	Acres cut in FHMU	% of Harvest in FHMU	Acres Cut in FHSZ	% of Harvest in FHSZ	Number of Culverts
Kadashan	112-42-25	59.8	9	33.0	22.8	103	24	36	1160	87	243	18	144
Freshwater	112-50-30	101.3	3	21.7	44.5	68	0	12	202	31	17	3	94
Game Creek	114-31-13	128	10	52	45	163	22	21	1169	38	324	11	228
Kennel Creek	112-50-20	33.8	5/13	10.0	11.2	31	0/11	0/20	53	12	0	0	43
Flat Fork	112-12-34	20.2	14	11.9	10.1	37	28	34	194	42	77	11	52
Suntaheen	114-27-15	35.7	13	25.3	12.3	79	0	31	304	27	111	10	110
Seal Creek	112-50-38	--	--	--	--	--	--	--	--	--	--	--	--
Gartina	114-31-9	21.0	20	24.6	10.0	77	3	14	287	28	14	1	107
Local Creek	112-11-15	16.8	10	12.1	9.8	38	0	20	91	22	13	3	53
Finger Creek	113-55-1	19.9	8	9.3	6.0	29	0	10	79	19	16	4	41
N. Freshwater	112-50-32	37.6	4/6	5.1	6.1	16	0/4	28/43	105	28	0	0	22
S.W. Freshwater	114-27-18	15.0	12	10.0	10.0	31	0	5	32	7	6	1	43
Hillmon	114-32-16	9.7	12	8.5	4.5	27	0	20	36	12	6	2	37
PASSAGE POINT	112-41-1	7.0	23	4.5	3.3	14	35	46	181	46	72	18	20
5-MILE	112-45-1	12.5	7	4.2	4.9	13	0	0	0	0	0	0	18



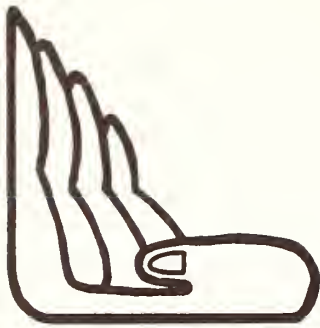
f. Visual and Recreation

This alternative poses minimal negative impacts on the aesthetic quality of the management areas included. Short-term negative effects include moderate contrasts in color and texture of the landscape following timber harvest. This impact could be significantly reduced on highly sensitive areas as discussed in Alternative 1. Long-term negative effects would result from the proposed clearcut units which would not meet recommended Visual Quality Objectives. However, it should be noted that many of these units were designed to minimize windthrow hazards.

The positive effects associated with this alternative are significant due to the adopted Visual Quality Objectives which would manage the visual resource for viewer sensitivity associated with the communities of Hoonah, Tenakee Springs and Angoon. The landscape viewed from the Alaska Marine Highway and tour ships routes would also be managed to protect important aesthetic qualities. In addition, Opportunities for increased dispersed recreation would result from the proposed road access to inland areas. Conversely, development may deter the recreationist seeking a pristine, undisturbed setting.

This alternative provides significant benefits when compared to Alternative 1 due to the decrease in the intensity and size of harvest units to protect important aesthetic qualities and due to increased roading which expands dispersed recreation opportunities.





Alternative 3

a. Soils

Although this alternative contained as many harvest areas having mass failure potential, the risk of failure or of failures entering streams was not deemed as high as in either Alternative 1 or 2. Harvest units having V-notch disturbance problems are about equal in area to those in Alternatives 1 and 2, but there are fewer units on alluvial floodplains or fans than in either of the other alternatives.

Total sediment production may be as high as that from Alternatives 1 or 2 (owing largely to the increased road miles) but the impacts to water quality and fish habitat should be lower because of dispersion.

b. Water

This plan provides the best opportunity for stream protection. Greater roading requirements, however, would result in more road related problems. Smaller, more dispersed units characteristic of this alternative, tend to maintain natural runoff responses.

c. Silviculture

As with Alternative 2, this alternative is not favored as a means of mistletoe control. Volume loss and environmental impact due to blowdown could also be expected. Significant increases in landings and miles of road will likewise increase yarding and haul costs.

d. Wildlife

Alternative 3 was designed to meet the "best management practices" for resource protection and is the preferred form of management for emphasizing the protection and maintenance of wildlife habitat. Maximum constraints on timber harvesting recommended by resource specialists were incorporated in unit and road design. As a result, Alternative 3 has the smallest acreage unit size (about 35 acres) and the largest number of units of any of the alternatives. The proposed units are irregular in shape, creating the most "edge" due to a high perimeter-to-area ratio. This alternative has the best dispersal of units; that is, the units are spatially spread over a larger area with more "leave" between units. Finally

this alternative has the fewest units with high potential of adverse impacts to wildlife habitats such as units occupying both banks of a salmon spawning stream, animal travel corridors, winter range or other high-use areas.

Alternative 3 would require the most management areas to be entered. Additional roads, camps and log transfer sites would be constructed to produce the same volume of timber (see table 16, page 72). But, TLMP has allocated an average of 70 percent of the volume in LUD III and 87 percent of the volume in LUD IV VCUs to timber harvest in order to meet timber commitments. This means that all LUD III and IV areas will be entered in the future and that the associated developments and impacts will occur at some future date, if not in 1981-86.

Dispersing small units over a larger area and allowing for many small entries in the future spreads the timber harvesting out in time and in space. This allows for a better mix of different aged stands (habitats) and avoids large, monotypic even-aged stands, such as are produced with Alternative 1. Such an interspersed of different aged vegetation provides better habitat diversity which is a general measure of the overall quality of the habitat. As unit size increases, some mammals, such as deer, may demonstrate reluctance to move between habitats.

e. Fish

Alternative 3 best meets the fisheries resource concerns expressed by public groups and fisheries resource professionals. This alternative incorporates known fish habitat protection measures which minimize the risk of adverse impacts. Fish Habitat Sensitivity Zones are avoided by leaving strips of uncut timber along both sides of mainstem streams where blowdown is not a serious problem. Flood plains or areas containing a high density of rearing streams generally are protected from logging where these areas have been identified on aerial photos or where on-the-ground information is available. All areas of known high sensitivity were avoided. Harvest was proposed in Fish Habitat Management Units where it was determined that management practices are adequate to minimize adverse impacts. Although biologists will review unit layout on the ground, projected impacts to the fishery resource will be minimal if this alternative is implemented.



KEY FOR TABLES FISHERIES DATA PER WATERSHED

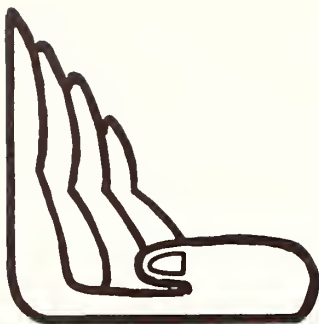
Column Data Provided

1. The watershed areas were determined with a polar planimeter on 1:63,360 maps.
2. Percent of watershed proposed for logging is area in a watershed to be logged divided by the total area of that watershed.
3. Length of road within each watershed was measured from 1:63,360 expanded scale maps.
4. Total stream length comprises known and suspected fish habitat above and below barriers to fish passage. Stream lengths were measured on 1:63,360 maps.
- 5 & 6. Average number of bridge and culverts on the proposed road system that will cross streams, tributaries, and drainage areas based on historical patterns in the Chatham Area. One mile (1.61 km) of road contains on the average: 7 corrugated metal pipe drainage structures (culverts): 4 minor bridges (native log stringer type, 6-15 m long.); and one major bridge greater than 15 m long.
7. Percent of total stream length with proposed logging along either one or two sides of the stream.

8. Percent of total stream length proposed to be cut on both sides.
9. Total acreage of Fish Habitat Management Units (FHMU), estimated from inspection of each proposed cutting unit on aerial photographs. In the context of this study, a FHMU is an area, within a proposed cutting unit, that contains salmonid (resident and anadromous) fish habitat and uplands in which development will likely affect fish habitat.
10. Percent of the total area proposed for logging that comprises FHMU.
11. Total acreage of Fish Habitat Sensitivity Zones (FHSZ) estimated from inspection of each proposed cutting unit on aerial photographs. In the context of this study, a FHSZ is an area, within a proposed cutting unit or at a bridge site, that contains salmonid (resident and anadromous) habitat that is important or critical for fish production and/or sensitive to development activities.
12. Percent of the total area proposed for logging that comprises FHSZ.
13. Numbers appearing in tandem (ie. 7/14) indicate value for pre-1981 logging vs. value by the end of the 1981-86 operating period.

Table 9 - Effects of Alternative #3 on Fish Habitat.

STREAM NAME	ADF&G NUMBER	WATERSHED AREA	% HARVESTED	ROAD LENGTH (KM)	STREAM LENGTH (KM)	NUMBER OF BRIDGES	% OF STREAM CUT ON 2 SIDES	% OF STREAM CUT ON 1 OR BOTH SIDES	ACRES CUT IN FHMU	% OF HARVEST IN FHMU	ACRES CUT IN FHSZ	% OF HARVEST IN FHSZ	NUMBER OF CULVERTS
KADASHAN	112-42-25	59.8	6	25	22.8	76	2	6	667	77	15	2	107
FRESHWATER	112-50-30	101.3	2	19	44.5	61	0	2	100	17	12	2	136
GAME CREEK	114-31-13	128	8.1	52	44.8	163	2.2	7.8	872	34	86	3	228
KENNEL CREEK	112-50-20	33.8	5/13	11	11.2	34	0/11	0/20	0	0	0	0	48
FLAT FORK	112-12-34	20.2	8.5	12	10.1	36	0	5	63	15	2	1	51
SUNTAHEEN	114-27-15	35.7	8	22	12.3	67	0	7	259	37	58	8	94
SEAL CREEK	112-50-38	30.0	--	--	13.1	--	--	--	--	--	--	--	--
GARTINA	114-31-9	21.0	15	21	10.0	64	2	12	195	26	26	3	90
LOCAL CREEK	112-11-15	16.8	7	14	9.8	42	0	13	59	21	8	3	59
FINGER CREEK	113-55-1	19.9	5	10	6.0	31	0	1	21	8	1	1	43
N. FRESHWATER	112-50-32	37.6	3/5	3	7.1	10	0/4	24/39	41	13	2	1	15
S.W. FRESHWATER	114-27-18	15.0	14	9	10.0	28	0	6	166	33	34	7	40
HILLMON	114-32-16	9.7	14	5	4.5	16	0	24	31	9	3	1	23
PASSAGE POINT	112-41-1	7.0	14	5	3.3	14	0	4	91	38	10	4	20
5-MILE	112-45-1	12.5	7	4	4.9	12	0	0	0	0	0	0	16



f. Visual and Recreation

The proposed harvest and related management activities result in minimal negative impacts on the aesthetic qualities of the management areas included. The positive impacts on recreation opportunities would be significant. This alternative provides for optimum management of the visual resource and recreation amenities through the adopted Visual Quality Objectives. The visual resource would be managed not only for the areas viewed from established primary travel routes, recreation areas, and use areas, but also for the inland areas associated with recreational amenities made accessible by proposed logging roads.

Short-term negative effects would result from moderate contrasts in color and texture of the landscape following timber harvest. This impact could be significantly reduced in highly sensitive areas as discussed in Alternative 1. Recreationists who seek an undisturbed setting would possibly be deterred by logging development and roading. Long-term negative impacts would result from proposed clearcut units which would not meet recommended Visual Quality Objectives. However, those impacts must be realized to minimize windthrow hazards and maximize overall resource protection.

This alternative provides optimum benefits when compared to Alternatives 1 and 2 due to the significant decrease in the intensity and size of harvest units to protect aesthetic qualities and increased roading which expands dispersed recreation opportunities.





Alternative 4

a. Wildlife

Proposed roads are located near estuaries, lakes, and marshes known to support moulting waterfowl and seasonal migrant species. Areas identified are the inland lake/marsh complexes in the Camden and Three Mile VCU's, the north side and head of Three Mile Arm, south side of Salt Lagoon, and the Head of Alvin Bay. The proximity of roads to these areas varies from immediately adjacent, as in the case at the head of Three Mile Arm, to 500 feet or more.

Construction, timber harvesting, and traffic over the road may cause displacement of waterfowl to more remote locations. The significance, duration, or magnitude of displacement is not known. Some observers note that certain wildlife and/or waterfowl species experience stress under conditions proximate man's activities. Others note little change in wildlife populations over time where roads are located relatively close to traditional use areas.

Hunting pressure on some species would increase in some places because of improved access from the logging camp at Rowan Bay. This would tend to balance by dispersing hunting from other locally used areas over an extended road system. The harvest of bear, wolf, and waterfowl might tend to increase over time with an attendant improvement in hunter success ratios, however, this is not certain since the size of the Rowan Bay community would remain relatively stable.

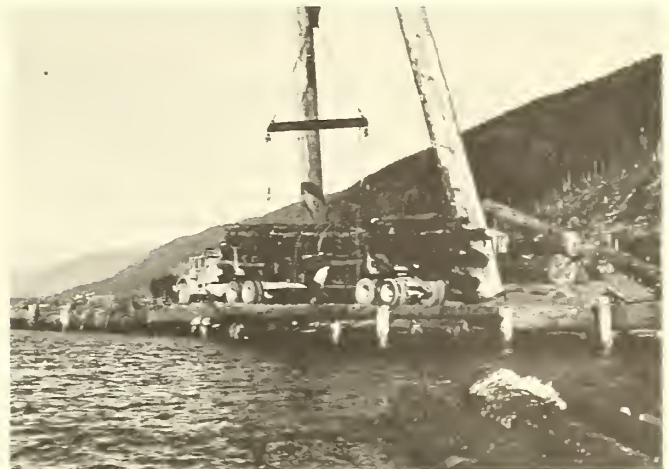
In a few areas (heads of Three Mile Arm, No Name Bay, Alvin Bay, and south side of Salt Lagoon) roading activities due to topographic constraints approach eagle nesting trees. Careful coordination on the final design of roads will be required.

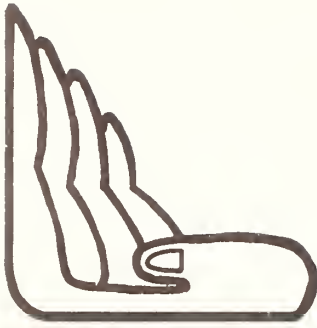
Six hundred acres of deer winter range on the north side of No Name Bay would be harvested with proportionate loss of potential carrying capacity in those units harvested. Overall this represents approximately 16 percent of the winter range surrounding No Name Bay. Proposals for timber harvesting on deer winter range in this area in operating periods subsequent to 1986 will need to evaluate the cumulative effects of further reduction on winter range in this particular area.

b. Fisheries and Estuarine

An additional log transfer site will be developed in No Name Bay. Impacts resulting from operations associated with log transfer sites have not been conclusively determined through research of past and existing facilities. In most cases transportation and economic alternatives hinge strongly upon the location and number of log transfer sites. The locations of log transfer sites are of concern to the Alaska Department of Fish and Game, the Alaska Department of Environmental Conservation, the Office of Coastal Management, the Army Corps of Engineers, the National Marine Fisheries Service, and the U.S. Fish and Wildlife Service, as well as the Forest Service.

The proposed log transfer site in No Name Bay consistently rates as the best site through an evaluation of engineering, social, estuarine, and wildlife criteria of ten potential sites examined.





c. Visual

The impact of timber harvest will be apparent from saltwater viewpoints with the exception of Port Camden. In all cases, however, units reflect the naturally appearing landscape, will not be viewed from major travel routes, and meet recommended visual quality objectives. Inland harvest units will be visible from the proposed road system. However, they will be viewed as middleground and foreground by relatively few recreationists and will therefore have low visual sensitivity.

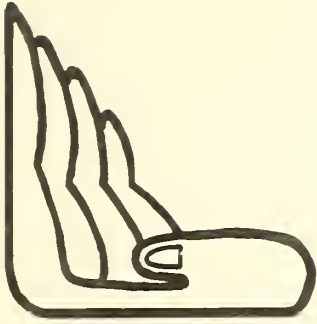
The proposed log transfer facility in No Name Bay is screened by landforms or islands and will not be visible from beyond its immediate vicinity.

d. Recreation

Timber harvest activities will not alter patterns or quality of saltwater recreation experience except possibly in the immediate vicinity of the proposed log transfer site at No Name Bay or where harvest units are visible. These factors may deter the recreationist seeking a pristine and undisturbed setting.

The proposed roads will provide access to a large area and will make it possible for more recreationists to use inland areas. Residents of the Rowan Bay camp will use the road for recreation purposes (assuming the availability of vehicles) accessing inland areas as well as the saltwater bays of East Kuiu as far south as Reid Bay. The proposed log transfer site will provide recreation access to the proposed road system from saltwater.





Alternative 5

a. Wildlife

In addition to the effects on wildlife described in Alternative 4, the proposed Port Camden log transfer site and related activities will disturb seals using traditional haulout rocks 1/2 mile northeast of the site. Further evaluation of the proposed site may disclose an alternate site or sites which would be equally favorable for log transfer operations with less potential for disturbance.

b. Fisheries and Estuarine

New log transfer sites are located in No Name Bay and Port Camden. While road construction and haul costs are favorable over other alternatives considered, the proposed Port Camden site consistently ranked lower in all criteria except engineering.

Port Camden is considered a highly productive area for salmon, herring, crab, and harbor seals and supports one of the most productive bottom fisheries in southeast Alaska; all available evidence indicates that a permanent log transfer site in this area of Port Camden carries with it an undetermined risk of impairment or damage to one or more of these valuable resources unless unique mitigation measures are determined, developed, and applied. Therefore, before a final decision on construction of a Port Camden transfer site is reached, the interdisciplinary team, with the cooperation of other concerned agencies, will make a determination of feasible mitigation measures required to eliminate the risk of serious impact to biological resources. If this determination is unsuccessful, other alternatives for the transfer of logs will be implemented.

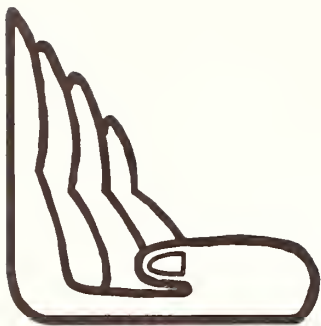
c. Visual

Visual effects will be the same as in Alternative 4. The additional log transfer site at Port Camden is also screened by landforms or islands and will not be visible outside the immediate vicinity.

d. Recreation

Effects on recreation will be the same as in Alternative 4 regardless of the addition of a log transfer site in Port Camden.





Alternative 6

a. Wildlife

This alternative would have less immediate effect on waterfowl habitat since the road system is limited to the northern portion of the management area and approaches fewer estuarine areas.

The potential for disturbing (i.e. approaching within 330 feet, not cutting) eagle nest trees as a result of road construction is limited to the head of Three Mile Arm. Care will be taken to avoid locating roads in proximity to nest trees wherever possible during final location.

Deer winter range on the north side of Three Mile Arm will be reduced by roads and timber harvest by approximately 900 acres. This represents approximately 30 percent of the winter range along the north shore. Comparatively small (less than 50 acres), widely spread harvest units are planned to ameliorate the effects of reduced habitat. Browse condition and trend transects in clearcuts and uncut stands to measure comparative use. As deer populations (which are currently quite low on Kuiu Island) increase, other monitoring techniques such as pellet group counts and mortality studies will be undertaken to determine how deer use is affected by the proposal.

Timber will be harvested over a smaller area than in Alternative 4. This will have a greater effect on upland wildlife. More travelways will be affected due to the need for additional spur roads. However, the effect will not be of as long a duration as that caused by main truck haul roads.

b. Fisheries and Estuarine

Only the existing Rowan Bay log transfer site would be used. The continued long term effects on this site are speculative. Log transfer operations at Rowan Bay have been modified over time to reduce the of debris. The Forest Service and Alaska Lumber and Pulp Company continue to cooperate with State and Federal agencies to monitor improve effects on the marine environment.

c. Visual

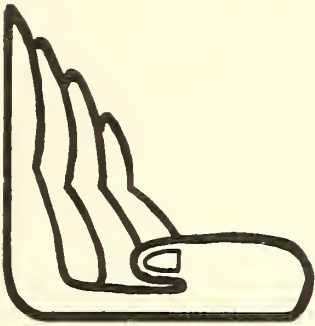
The impact of timber harvest will be apparent from saltwater viewpoints in Port Camden and Three Mile Arm but, as in Alternatives 4 and 5, cutting units will reflect the naturally appearing landscapes, will not be viewed from major travel routes, and

meet recommended visual quality objectives. The impact of inland units will increase over Alternatives 4 and 5 due to an increase in number and density of units; the visual sensitivity will remain low, however, due to infrequent visits by few recreationists.

d. Recreation

Alternative 6 provides recreation opportunities similar to Alternatives 4 and 5 but does not provide access to as much area. The main trunk road will only extend as far south as Salt Lagoon and will not provide access to No Name, Alvin, or Reid Bays. The intensity of timber harvest in the northern portion of the management area will increase which may decrease the opportunity for recreational experiences which require a less disturbed setting.





Alternative 7

a. Wildlife

Effects on wildlife are the same as described in Alternative 6 and those attendant to the log transfer site in Port Camden described in Alternative 5.

b. Fisheries and Estuarine

The effects are the same as described in Alternative 5 regarding the Port Camden log transfer site.

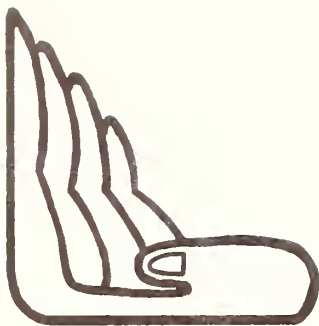
c. Visual

Visual effects will be the same as in Alternative 6.

d. Recreation

Effects on recreation will be the same as in Alternative 6.





**Alternative 8, for
Chatham and Stikina
Alaska Lumber and Pulp Co.**

a. Soils

This alternative produces relatively low risks of soil mass failure or resulting impacts to fish streams. Road construction miles and resulting sediment, are generally as low (if not lower) than the other alternatives. Harvest units are more concentrated by drainage.

b. Water

This alternative would have a major impact on the water resources monitoring program in the Kadashan watershed. The Kadashan river system is the USDA Forest Service Region 10 barometer watershed for evaluating effects of logging on water quality. This Kadashan study requires that Tonalite (West Fork, Kadashan River) be maintained in its undisturbed state.

Concentrated harvesting or harvesting large portions of the watershed area may result in quicker hydrologic responses and consequently a slightly higher water yield than from timbered areas. Higher water yields or increased flow combined with larger disturbed areas may result in increased sediment production.

c. Silviculture

Implementation of this alternative would provide adequate mistletoe control with low timber blowdown probabilities.

Yarding costs would generally be lower than for the other alternatives since less skyline yarding is required. Timber haul costs would be minimal.

The most significant difference between this alternative and those prepared by the IDTs is that implementation would leave some presently operable volume unavailable (with proposed harvest systems). The plan also does not enter some areas now which may be less economic if deferred to later entries.

Seal Creek must be harvested to prevent further loss of blowdown volume from decay. Portage Peninsula, and Pavlof Ridge roads provide increased cost benefit ratios over the life of the contract

and over the rotation. Alternative 8 does not utilize these opportunities.

d. Wildlife

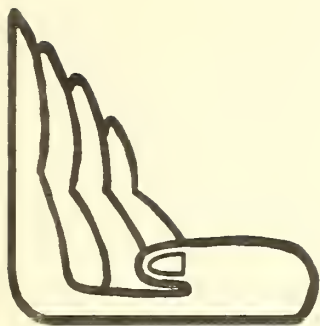
For an evaluation of Alternative 8, proposed units in four drainage areas (Suntaheen, Salt Lake Bay, Trap Bay and Gartina) were analyzed for effects on wildlife habitat. A comparison with units under the other three Chatham Area alternatives for the same areas was made to better judge the relative impacts. Alternative 8 had the fewest units of any of the alternatives and the second largest average unit size for the four drainage areas. It also had the most units (18 for Alternative 8, 10 for Alternative 1) considered to have high potential of adverse impacts on wildlife. Units rated as high risks were: those in low elevation deer winter range; units taking timber from both sides of a major stream; units that blocked wildlife corridors; and units near or adjacent to estuarine areas.

Although quantitative measurements were not made on leave strip effectiveness, a qualitative evaluation shows that Alternative 8 probably has a greater average distance between units than Alternative 1. If true, this alternative would allow for a better intermixture of old growth and cut over areas, thus providing better habitat diversity than more concentrated cutting patterns.

The overall impacts of this proposal are anticipated to be the most severe of the four alternatives affecting the Chatham Area. Although Alternative 8 may pose less risks to the upper valley areas, this gain is offset by the adverse impacts of harvesting timber in the more sensitive wildlife habitats.

e. Fish

Table 6 (page 57) shows the effects by watershed for Alternative 8, and table 18 (page 77) compares this alternative with the others. These tables show that Fish Habitat Sensitivity Zones were avoided to about the same extent as Alternative 2. The percent of stream cut to both sides is similar to Alternative 3. Streams logged to either or both sides and Fish Habitat Management Unit cut within the logging area is much higher than Alternative 1. Projected impacts if this alternative were implemented are probably somewhat greater than Alternative 2. The biologist's input would be necessary in all phases of the logging plan.



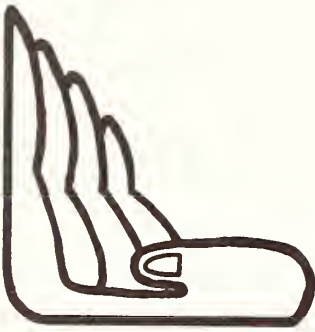
KEY FOR TABLES FISHERIES DATA PER WATERSHED

Column	Data Provided
1	The watershed areas were determined with a polar planimeter on 1:63,360 maps.
2	Percent of watershed proposed for logging is area in a watershed to be logged divided by the total area of that watershed.
3.	Length of road within each watershed was measured from 1:63,360 expanded scale maps.
4.	Total stream length comprises known and suspected fish habitat above and below barriers to fish passage. Stream lengths were measured on 1:63,360 maps.
5 & 6	Average number of bridge and culverts on the proposed road system that will cross streams, tributaries, and drainage areas based on historical patterns in the Chatham Area. One mile (1.61 km) of road contains on the average: 7 corrugated metal pipe drainage structures (culverts); 4 minor bridges (native log stringer type, 6-15 m long.); and one major bridge greater than 15 m long.
7.	Percent of total stream length with proposed logging along either one or two sides of the stream.

8. Percent of total stream length proposed to be cut on both sides.
9. Total acreage of Fish Habitat Management Units (FHMU), estimated from inspection of each proposed cutting unit on aerial photographs. In the context of this study, a FHMU is an area, within a proposed cutting unit, that contains salmonid (resident and anadromous) fish habitat and uplands in which development will likely affect fish habitat.
10. Percent of the total area proposed for logging that comprises FHMU.
11. Total acreage of Fish Habitat Sensitivity Zones (FHSZ) estimated from inspection of each proposed cutting unit on aerial photographs. In the context of this study, a FHSZ is an area, within a proposed cutting unit or at a bridge site, that contains salmonid (resident and anadromous) habitat that is important or critical for fish production and/or sensitive to development activities.
12. Percent of the total area proposed for logging that comprises FHSZ.
13. Numbers appearing in tandem (ie. 7/14) indicate value for pre-1981 logging vs. value by the end of the 1981-86 operating period.

Table 10 - Effects of Alternative #8 on Fish Habitat.

STREAM NAME	ADF&G NUMBER	WATERSHED AREA	% HARVESTED	ROAD LENGTH (KM)	STREAM LENGTH (KM)	NUMBER OF BRIDGES	% OF STREAM CUT ON 2 SIDES	% OF STREAM CUT ON 1 OR BOTH SIDES	ACRES CUT IN FHMU	% OF HARVEST IN FHMU	ACRES CUT IN FHSZ	% OF HARVEST IN FHSZ	NUMBER OF CULVERTS
KADASHAN	112-42-25	59.8	18	32	22.8	100	0	70	2121	80	255	10	140
FRESHWATER	112-50-30	101.3	6	21	44.5	65	1	12	970	71	120	9	91
KENNEL CREEK	112-50-20	33.8	6	10	11.2	30	0/11	11	50	10	0	0	42
FLAT FORK	112-12-34	20.2	12	14	10.1	45	17	50	465	76	101	16	63
SUNTAHEEN	114-27-15	35.7	11	19	12.3	60	0	37	495	50	93	10	84
GARTINA	114-31-9	21.0	18	21	10.0	65	0	46	659	70	52	6	91
N. FRESHWATER	112-50-32	37.6	3	6	7.1	20	0/4	46/62	212	86	16	6	28
S.W. FRESHWATER	114-27-18	15.0	15	8	10.1	25	0	29	388	71	52	10	35
HILLMON	114-32-16	9.7	10	5	4.5	15	18	51	239	100	58	24	21
PASSAGE POINT	112-41-1	7.0	18	5	3.3	15	24	52	181	59	34	11	21
5-MILE	112-41-1	12.5	--	--	4.9	--	--	--	--	--	--	--	--

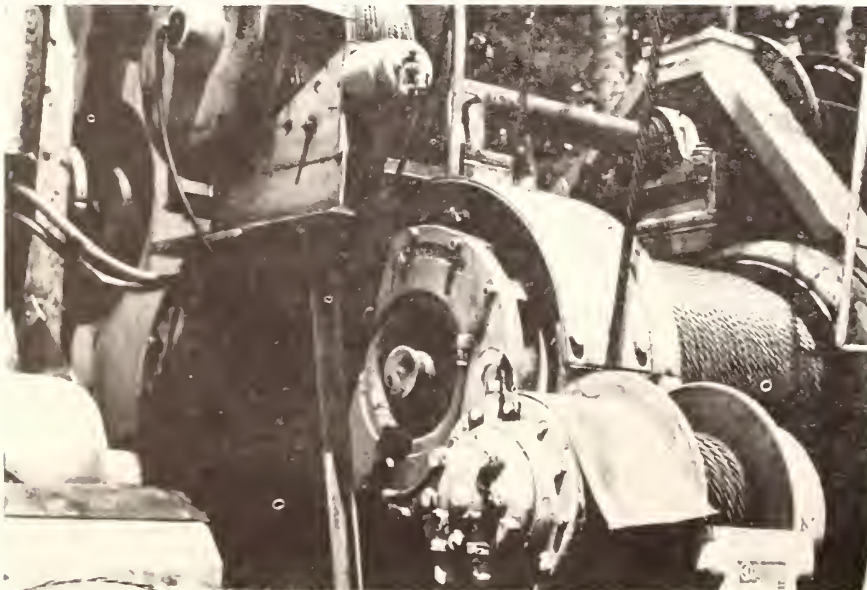


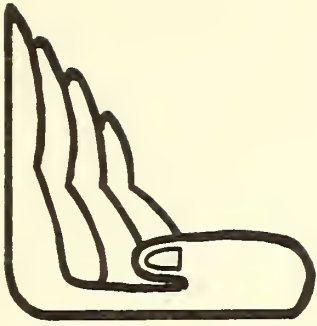
f. Visual and Recreation

The proposed harvest and related management activities would have a high risk of adverse impacts on the aesthetic quality of the management areas included. This would result from a lack of visual resource management by overlooking viewer sensitivity associated with established recreational use patterns and the aesthetic qualities of the natural landscape.

There are both short-term and long-term potential negative effects associated with this alternative. The risk of short-term negative effects would result from the intense visual contrasts in color and texture in the landscape following timber harvest. However, this impact could be significantly reduced in highly sensitive areas as discussed in Alternative 1. The risk of long-term negative effects would result from the loss of inherent aesthetic qualities of the landscape associated with the intensity, size, and shape of proposed clearcut harvest units. Approximately two thirds of the proposed clearcuts would be classified at least as maximum modification of the landscape.

The positive effects associated with this alternative would be derived from the proposed logging roads throughout the operating areas. These roads would provide access to interior land areas, thus expanding opportunities for dispersed recreation.





Evaluation of Alternatives

The evaluation process is designed to ensure that the recommended operating plan for 1981-86 is consistent with the goal of providing current and future generations with a sustained supply of wood fiber which is harvested in a manner that complies with USDA Forest Service multiple use management policies. The evaluation process examines long term (full rotation), as well as short term, benefits and costs of each viable alternative plan. It presents the process and the rationale by which the recommended plan was developed.

Alternative harvest plans for ALP during 1981-86 were formulated, as much as possible, within the constraints of the decision criteria (page 30). The relationships of the developed alternatives to these criteria are as follows:

a. The preferred alternative should provide an opportunity to meet contractual obligations

This requires providing 525 MMbm plus the 1976-81 carry over volume over the life of the plan. Any combination of Chatham and Stikine management options could be made to meet this requirement. The ALP proposal also meets this requirement.

b. The Forest Service should have the people and dollars to implement the plan

The requirement can be met for all alternatives at present personnel and funding levels.

c. The economic costs should not exceed economic benefits

In order to provide the timber volume required under the contract while meeting environmental regulations and policies, additional investment is required for at least five of the eight alternatives. Adjustments of cutting unit boundaries to meet new regulations governing clearcut size (page 64) would probably result in required investment for all alternatives.

Displayed below is the investment required for each alternative to break even. Calculations assume that average market conditions will continue so that two MMbf will pay for one mile of road.

Table 11:

Additional Investment Costs for Each Alternative

Chatham Alternative 1 - \$0
Chatham Alternative 2 - \$13 million
Chatham Alternative 3 - \$25 million
Stikine Alternative 4 - \$1 million
Stikine Alternative 5 - \$1 million
Stikine Alternative 6 - \$0
Stikine Alternative 7 - \$0
ALP Alternative 8 - \$4 million

In addition to providing required timber volumes, the investments will purchase roads to be used mainly for timber removal but which may be used for other purposes, such as recreation. These road systems will also be used at a later period or periods to access and remove the remaining volumes. Total road mileage and the volume available for future entries are shown in Table 8:

Table 12:

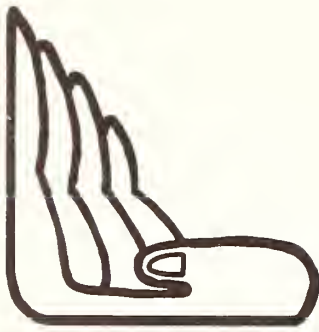
Road Mileage/Remaining Volume per Alternative

ALTERNATIVE	ROAD MILES	REMAINING VOLUME (MMbm)
1	209	569
2	297	923
3	387	1400
4	74	750
5	75	750
6	62	750
7	64	750
8	310	1328

Tables 8 and 9 show that while some alternatives appear more cost effective based on an initial investment need, some of those with higher initial investments will have greater long term returns. Thus, a higher initial investment may be advantageous as a long term economic investment as well as providing better timber management and resource protection. The recommended action should reflect, however, a balance between short term costs (initial investments) and long term returns.

d. The environmental and socioeconomic costs should not exceed total benefits.

These conditions exist when all benefits, including amenity as well as monetary values, equal or exceed the costs. The interdisciplinary team believes that compromise alternatives which



balance potential costs, both amenity and monetary, offer the best decision.

Environmental costs could occur to fisheries if timber harvest triggers mass soil movement, resulting in sedimentation of stream habitat; to wildlife if old growth timber is cut in critical winter range for deer; to visual resources if cutting units along heavily traveled water routes are designed for maximum modification. These costs were discussed in "Effects of Implementation."

Economic costs result if harvest is deferred from areas of high volume timber to protect wildlife and fisheries resources. Economic costs also result if cutting units are modified or deleted to avoid soil hazard areas or to manage for visual resources. Long term costs result, too, if LUD IV intensive management is not pursued. Some proposed roading has been planned to avoid adverse environmental impacts or to better meet socioeconomic objectives; this results in somewhat higher construction costs.

Benefits in this plan accrue primarily through generation of direct employment in southeast Alaska and secondary economics generated by supporting industries. However, roads to enhance dispersed land-based recreation and serve communities; provision for fisheries enhancement projects; and opportunities to manage wildlife habitat are also direct benefits of these proposed operating plans.

Even though the potential for adverse environmental impacts has not been entirely eliminated in the proposed management actions, neither have timber harvest economics been fully maximized. The alternative actions arrayed in this environmental impact statement each attempt to balance costs with benefits, but with varying emphasis on either amenity resources or timber production. For example, Alternative 3 (Chatham Area) tends to place more emphasis on amenity resources than Alternative 1. Commodity resource benefits, however, are more nearly maximized in Alternative 1 than in Alternative 3. The remaining Chatham

Table 13 - RELATIVE IMPACT ASSESSMENTS (FIRST ENTRY) BY ALTERNATIVE

RESOURCE	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVES 4-7*	ALTERNATIVE 8
Timber Harvest Economics (short term)	+4	-2	-4	+3	+4
Timber Management	+3	+2	0	+4	-2
Soils	-2	-1	-1	-1	-1
Wildlife	-4	-2	-1	-2	-4
Fish	-3	-2	-1	-1	-3
Visual	-4	-1	-1	-1	-4
Semi-Primitive Land Based Recreation	-1	+1	+2	+2	-2

+ Denotes benefits (higher value indicates greater benefits)

- Denotes adverse impacts (higher negative values indicates greater adverse impacts)

* Primary differences are in log transfer sites and transportation systems, with relatively few differences in resource impacts.



and Stikine alternatives more closely balance commodity with amenity values.

e. The preferred alternative should reflect expectation expressed in the public involvement process.

Public involvement in the planning process has included community input, other State and Federal agency participation, and comments from special interest groups (see Section IV: Consultation With Others). The issues raised during the course of this and earlier planning processes were discussed in Section II.

The impossibility of fully meeting all expectations has been discussed and is an obvious difficulty in public land management. However, the IDT considers all alternatives to reflect responsiveness to public expectations. The potential of this operating plan to serve community needs and forest recreationists is a particular strength of the plan and of the IDT process used to develop it. Those who do not desire or will not benefit from developmental activities may be less satisfied with the alternatives. However, considerable effort has been made to incorporate resource protection measures and to minimize impacts of development in sensitive areas.

f. The preferred alternative must be within direction set in the Tongass Land Management Plan and must be within existing laws and regulations

Laws, regulations, and policies relating to forest practices, as well as the Tongass Land Management Plan, specify management direction. Application of such direction, as in a timber harvest plan, requires interpretation by agency personnel having various resource management qualifications (see Appendix for identification of IDT members).

Management alternatives presented in this environmental statement represent various levels of assurance in meeting the laws, regulations, and policies.

The data presented in this EIS is based substantially on photographic interpretation; hence, this data does not constitute the level of information needed to say with certainty that all laws, regulations, and policies will be met. Considerable flexibility will exist when the plan is implemented to make changes necessary for bringing the plan

into conformance with these laws, regulations, and policies.

Alternatives 3 (Chatham Area) and 5 (Stikine Area) represents the form of management with the greatest degree of assurance for meeting this criteria. Alternative 1 probably includes management actions most likely to require on the ground modifications to meet fully existing laws, regulations, and policies (as well as the greatest management expense to assure they are met). In this respect, Alternatives 2 and 4 - 8 display management actions somewhere between Alternative 1 and Alternative 3.

Based on these criteria, IDT evaluation of each alternative is:

Chatham Alternative 1 - Could provide 395 MMbm with no supplemental funding but has high environmental trade offs.

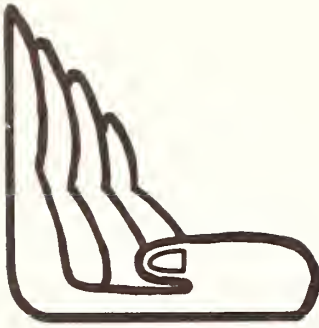
Chatham Alternative 2 - Could provide 395 MMbm with about \$13 million additional funding. This alternative has fewer significant environmental trade offs, but some timber loss and related adverse environmental impacts thorough blowdown are likely.

Chatham Alternative 3 - Could provide 395 MMbm with about \$25 million additional funding. There were few environmental trade offs but, again, has risk of blowdown.

Stikine Alternative 4 - Could provide 130 Mmbm with road and facility costs similar to alternatives 5, 6, and 7.

All costs are high due to the additional distance to Rowan Bay offsetting the advantage of only one new log transfer site. Environmental impact issues are satisfactorily resolved. This alternative was not selected because it lacked the transportation flexibility and resource management capability of Alternative 5.

Stikine Alternative 5 - Could provide 130 MMbm with road and facility costs similar to Alternatives 4, 6, and 7 (see Stikine Area rationale for alternative selection). All costs are lower because of shorter haul distances which are, however, partly offset by the cost of an additional log transfer site. Environmental impact issues are satisfactorily resolved. This alternative was selected because it offered greater transportation flexibility and resource management capabilities.



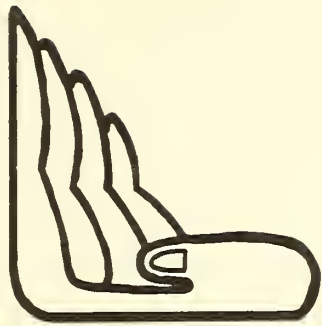
Stikine Alternative 6 - Could provide 130 MMbm with road and facility costs similar to Alternatives 4, 5, and 7.

Haul costs are high due to additional distance to Rowan Bay offsetting the advantage of no new log transfer site. Environmental impact issues are satisfactorily resolved. This alternative was not selected because it did not extend the main trunk road south as far as possible and therefore, did not provide the level of transportation flexibility and resource management capability of Alternatives 4 and 5.

Stikine Alternative 7 - Could provide 130 MMbm with road and facility costs similar to Alternatives 4, 5, and 6.

All costs are lower than Alternative 6 due to location of the log transfer site in Port Camden. Environmental impact issues are satisfactorily resolved. This alternative was not selected because it did not extend the main trunk road south as far as possible and therefore did not provide the level of transportation flexibility and resource management capability of Alternatives 4 and 5.

ALP Alternative 8 - Could provide 554 MMbm with about \$4 million in additional funding. Although this alternative has some environmental strengths (pages 56-58), there were also significant resource concerns. Because harvest units are more concentrated by drainage, there is increased potential for sediment production in streams. There is also a high percentage of cutting units proposed in sensitive wildlife habitat areas, eg. within low elevation deer winter range and near estuaries. This alternative also makes some economically available timber uneconomical for additional entries.



Recommended Action

Development

IDT analysis reached the conclusion that none of these eight alternatives singly represented the best alternative, but that components found in all alternatives should be considered on an area-by-area basis. The process of combining alternatives to develop the IDT Recommended action was important on the Chatham management areas where alternatives 1, 2, and 8 were modified to eliminate major environmental problems while providing an economically achievable plan. Resources were considered on individual areas and the appropriate alternative selected to best meet management concerns within economic constraints. On the East Kuiu Management Area, this blending of environmental and economic capabilities had been adequately achieved by Alternative 5.

The recommended action proposes harvest of 525 MMbm of timber from eight management areas: Whitestone Harbor, Freshwater Bay, Crab Bay, Corner Bay, Tenakee Inlet, Kelp Bay, Kadashan, and East Kuiu. A total of 369 miles of road must be constructed to access this volume.

Economic Analysis

Economic analysis of federal programs must recognize that benefits and costs do not accrue instantly, but overtime. Some expenditures yield immediate benefits while others yield a benefit stream over many years. To evaluate such benefit streams, future proceeds and costs must be translated into present values. They must be discounted in recognition that future benefits are less valuable than present ones. To evaluate the alternatives and Recommended Action for the 1981-86 ALP operating period, both five and ten percent discount rates were used.^{1/}

^{1/} Since 1969, the Office of Management and Budget (OMB) has required a uniform 10 percent discount rate, except where another rate is mandated by legislation. On June 16, 1979, the Secretary of Agriculture requested that OMB review this policy, recommending a discount rate of four percent. This rate would result in a better economic timber operation than either the five or ten percent discounts displayed in this statement.

The economic analysis also included calculations based on two sets of stumpage prices: RPA stumpage values which reflect primary manufacture regulations in southeast Alaska and an inputted value of stumpage which identifies the value of the logs if exported in the round. The importance of using both stumpage values has been demonstrated by Regional Forest Service Economist Ron Glass in a March 1979 draft report, entitled "Investment Analysis of Precommercial Thinning in Southeast Alaska."

In summary, these two values indicate the multiple objectives of government so that some monetary return is sacrificed to provide other social benefits. Under the primary manufacture regulations, maximum monetary returns are foregone in order to stimulate local employment and to stabilize the regional economy.

Finally, both costs and returns in this analysis were based on the value of the logs at the log transfer site. This permits an accurate reflection of the different road construction and haul costs of each alternative and the Recommended Action.

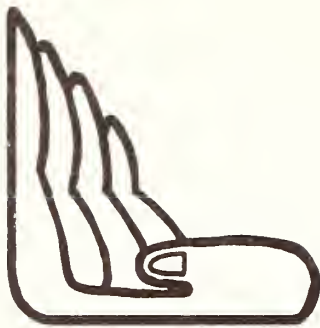
Based on these methods of analysis, the benefit/cost ratios of each alternative and the Recommended Action are as follows:

Table 14

Benefit/Cost Ratios of Alternatives and Recommended Action *

Alternative	Imputed Value i=10%	Imputed Value i=5%	RPA Value i=10%	RPA Value i=5%
1	1.37	1.51	.82	.90
2	1.38	1.51	.83	.91
3	1.39	1.52	.83	.91
4	2.09	2.29	.98	1.08
5	2.11	2.32	.98	1.08
6	2.03	2.20	1.01	1.10
7	2.11	2.30	1.00	1.10
8	1.56	1.63	.84	.92
RA	1.42	1.59	.61	.68

* Alternatives 1-7 are partial alternatives with 1-3 developed for Chatham management areas and 4-7 developed for the Stikine management area. Although not displayed here, 12 combinations of Chatham/Stikine alternatives are possible and can be assessed by combining the displayed data. Alternative 8 (ALP Alternative) and the Recommended Action included both areas.



The economic analysis indicates that the benefit/cost ratio for the Recommended Action is 1.42 when the imputed value for timber and the current 10% discount rate are used. Stated simply, benefits exceed costs 1.42 times. Other values attributed to the road system would make the Recommended Action more favorable. The difference between this figure and the lower RPA values (.61 at 10 percent; .68 at five percent) reflects the cost of social benefits obtained through primary manufacture regulations. This economic analysis also indicates the cost of other objectives met by this timber operation, including measures for environmental protection and harvest of marginal timber as discussed in the following section.

Harvest of Marginal Timber

The Recommended Action includes 10,185 acres of marginal timber. The marginal timber requires a public investment to make it economical for ALP to harvest it. The Recommended Action will need \$2.6 MM/year or \$13 MM for the 5-year period to make it economical to harvest. TLMP provides for \$11.7 MM per year of investment for the Tongass National Forest. The \$2.6 MM required for the Recommended Action appears to be reasonable.

Table 15

Commercial Forest Land in Recommended Action.

Component	Acres	Percent
Unregulated	1,200	4
Marginal	10,185	36
Standard and Special	16,915	60
	28,300	100

Cutting Unit Size

Subsequent to the selection of the IDT recommended action, the USDA Forest Service proposed guidelines for land and resource management planning in the National Forest System (see "Federal Register," May 4, 1979). Included in these proposed guidelines was a new standard establishing a 100-acre maximum clearcut size in coastal Alaska. This represents a reduction in harvest unit size from the current 160-acre maximum.

In response to those proposed guidelines, the interdisciplinary teams reviewed the recommended action which had been prepared in accordance with the 160-acre standard. The Chatham Area IDT concluded that, of 38 cutting units which exceeded 100 acres, 35 should be reduced. The Stikine Area IDT reduced all of the 17 units which exceeded 100 acres. The result is an average cutting unit size of 55 acres. Those units which were reduced are identified in the following table.

CUTTING UNITS REDUCED IN SIZE TO 100 ACRES OR SMALLER			
Area name	Unit number	Final size in acres	Comments
Upper Game	26	89	Deleted north-west portion.
Lower Game	54	100	Redesigned.
	27	65	Deleted northern portion.
	31	75	Leavestrip in 31,
	31A	29	making 31, 31A.
Pavlof Ridge	6	92	Redesigned.
	5B	97	Redesigned.
	2	70	Reduced.
	4	84	Reduced.
Freshwater	23	89	Deleted south-east portion.
	38	98	Remeasured.
	44A	100	Deleted south-east portion.
Kadashan	18	99	Deleted eastern portion.
Finger Creek	10	98	Deleted southern portion.
Gartina	9	75	Leavestrip in 9,
	9A	58	making 9, 9A.
	10	74	Leavestrip on 10,
	10A	72	making 10, 10A.

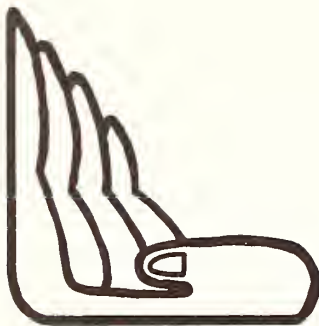
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CUTTING UNITS REDUCED IN SIZE TO 100 ACRES
OR SMALLER--Continued

Area name	Unit number	Final size in acres	Comments
Gartina	15	99	Deleted top half; road improbable.
Catherine	17	78	Reduced.
15-Mile	12	61	Leavestrip in 12, making 12, 12A.
Seal Creek	3	162	Redesigned.
	5	100	Redesigned.
	6	89	Redesigned.
	8	100	Redesigned.
Trap Bay	4	27	Redesigned.
	7	64	Redesigned.
	17	66	Redesigned.
	25	61	Redesigned.
	32	60	Redesigned.
	34	100	Redesigned.
	38	90	Redesigned.
	39	100	Redesigned.
	39A	18	Redesigned.
Camden	203	57	These
	206	58	following
	209	32	East Kuia
Threemile	215	87	units were
	219	65	reduced to
	220	82	windfirm
Lagoon	225	100	boundries
	227	76	
	230	65	
	233	41	
No Name	234	98	
	236	100	
	245	100	
Alvin	248	35	
	250	90	
	251	100	
	255	66	
	256	100	

These reductions in unit size necessitated revision of the recommended action to add that volume foregone in cutting unit reductions. A total of 26 units on East Kuia and 25 units in the Iyoutug drainage of northeast Chicagof Island were added to the recommended action. These are shown in the next table.



CUTTING UNITS ADDED OR EXPANDED TO PROVIDE
TIMBER VOLUME FOLLOWING CLEARCUT SIZE REDUCTIONS

Area name	Unit number	Final size in acres	Comments
Iyouktug	46	100	See following text for Iyouktug units.
	47	91	
	48	52	
	49	70	
	56	69	
	57	99	
	58	43	
	59	79	
	60	11	
	61	37	
	61A	21	
	62	31	
	62A	76	
	63	75	
	64	13	
	53	83	
	54	80	
	54A	18	
	54B	15	
	54C	43	
	54D	12	
	54E	12	
	55	18	
	55A	46	
	52A	175	
East Kuiu: Camden	201A	77	Added.
	206A	25	Added.
	206B	57	Added.
	209A	18	Added.
	214A	30	Added.
Threemile Lagoon	221	61	Expanded.
	225A	58	Added.
	227A	30	Added.
	227B	19	Added.
	228A	59	Added.
	229A	40	Added.
	230A	90	Added.
	233A	89	Added.
	239A	49	Added.
	240	46	Expanded.
No Name	240A	19	Added.
	240B	36	Added.
	240C	7	Added.
	243A	73	Added.
	244	91	Expanded.
	245A	100	Added.

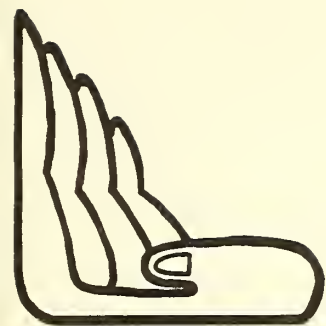
CUTTING UNITS ADDED OR EXPANDED TO PROVIDE TIMBER
VOLUME FOLLOWING CLEARCUT SIZE REDUCTIONS--Continued

Area name	Unit number	Final size in acres	Comments
Alvin	247A	23	Added.
	247B	28	Added.
	251A	35	Added.
	251B	60	Added.
	253A	42	Added.
	253B	26	Added.
	255A	64	Added.
	257	68	Expanded.

The new regulations specify those conditions under which a cutting unit may exceed 100 acres. The Chatham Area IDT identified three units which appear to meet those conditions. The recommended action, therefore, includes one unit in the Whitestone Harbor Management Area (unit 52A) and two units in the Freshwater Bay Management Area (units 3 and 7) which exceed 100 acres. The basis for this recommendation is the need to establish windfirm unit boundaries. The special circumstances encountered in each of the three unit designs are discussed in the following sections on the Whitestone Harbor and Freshwater Bay Management Areas.



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Description

Selection of alternatives for individual areas is described, as follows:

WHITESTONE HARBOR MANAGEMENT AREA

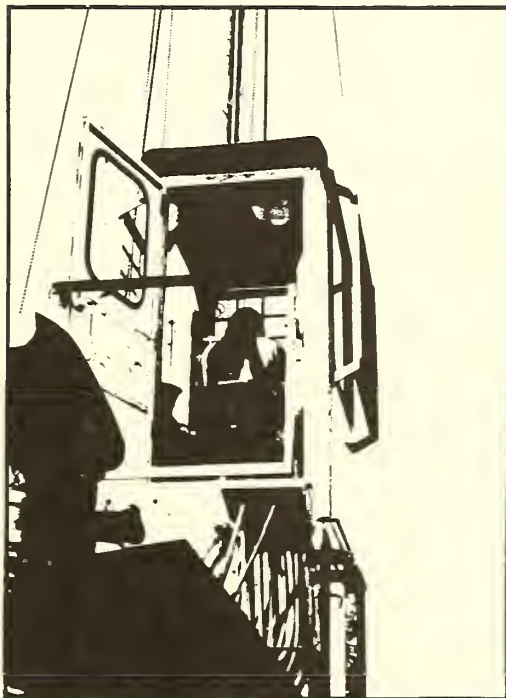
The recommended alternative would provide approximately 97 MMbm from Gartina, Suntaheen, and Iyoutug. All VCUs are designated LUD IV by TLMP. An estimated 296 MMbm will remain for additional entries including Gypsum and Wukuklook to be entered in 1986-91. Seventy-one miles of road will be constructed. To meet clearcut size regulations, the IDT reduced the size of five units in Gartina and added 25 units in the Iyouktug drainage.

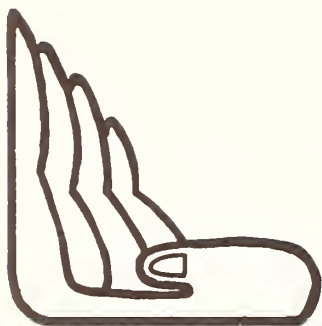
Unit 52a in the Iyouktug drainage has been recommended by the IDT to exceed 100 acres in size. Blowdown patches throughout the valley indicates regular storm wind channeling. Unit 52a is located on a hillside that is frequently exposed to the high velocity winds. Small blowdown patches can be seen throughout the unit. The unit shape is based upon wind firm boundaries which should minimize blowdown along man-made edges. The resultant unit contains 175 acres. This is the minimum size that can be designed with windfirm boundaries.

For improved visual and wildlife habitat management, Alternative 2 was selected in the following areas:

- * Foreground viewable portion of Suntaheen, including approximately one-fourth of the VCU
- * The west fork of Suntaheen River for wildlife habitat management

The remaining portions of this management area incorporated elements of Alternatives 1 and 8 but with major environmental problem areas deleted.





The log transfer site at Hoonah will also be used for volume harvested from Game Creek (about 80 MMbf) in the Freshwater Bay Management Area.

The proposed action for the Whitestone Harbor Management Area includes one log transfer site at Hoonah to serve the entire area. This log transfer site was selected over possible sites at Hoonah and Whitestone Harbor and a barge transfer site on Iyoukeen Peninsula. The decision was based on the following factors: (1) impact to wildlife and marine habitat; (2) Conflict with popular small boat anchorage at Whitestone Harbor; (3) Physical inadequacy of sites during windstorms; and (4) long term planning objectives for the Whitestone Harbor and Freshwater Bay Management Areas.

One of the major benefits of completed allocation through TLMP is increased opportunity for long-range planning. During the course of developing the 1981-86 ALP operating plan, the IDT recognized that many benefits would be derived from developing an interconnected road system for management of the Whitestone Harbor and Freshwater Bay areas.

- * Logical and systematic development of timber resources in the two management areas.
- * Increased safety and decreased costs to administer timber operations and conduct other resource management activities from the road system.
- * Established access to areas of outstanding recreational potential.
- * Significant socioeconomic benefits to the two communities (Hoonah and Kennel Creek) who will be linked to this road system by the end of the 1986-91 operating period. The opportunity exists, as well, for private landowners to construct access roads to the road system. At present, this includes residents of the Mt. Bether community and five other private landowners in the Game Creek drainage. In the future, additional lands in private ownership through State land dispersal is anticipated.
- * Opportunity for cooperative development of public and private lands, including the Huna Totem which has selected land in the Spasski drainage and possibly including Sealaska Corporation which has a secondary selection in VCU's 203, 204, and 205.

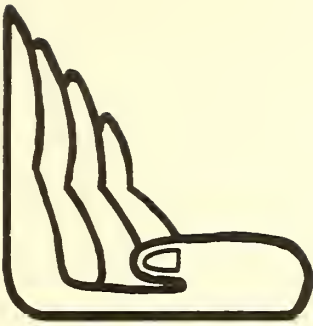
The IDT recognized, also, that this interconnected road system and coordinated management of the Whitestone Harbor and Freshwater Bay areas should

be spread over two operating periods (1981-86, 1986-91). Reasons were:

- * Volume proposed for 1981-86 (above) is keyed to capability of the log transfer site to be developed at Hoonah. More or less volume in either operating period would either overtax or underutilize the planned log transfer site.
- * This portion of northeast Chichagof includes a resident population of approximately 1,000 persons (in Hoonah, Mt. Bether, and Kennel Creek). Over time, the increased economic benefits, employment opportunities, recreational potential, and improved transportation is considered highly desirable by these communities and, therefore, by the Forest Service. However, intensive operations, concentrated during one operating period, would encourage (if not guarantee) a "boom-bust" situation with extremely adverse social and economic effects.

Because of the immediate need to provide long term (minimum 10 year) economic stimuli to Hoonah and Mt. Bether and encourage Mt. Bether road access, the decision was made to harvest in the Gartina drainage and Suntaheen valley and to defer Gypsum/Wukuklook during the 1986-91 operating period. Additional harvest volume to the Hoonah log transfer site from Game Creek is discussed under the Freshwater Bay Management Area. Other reasons for this decision are:

- * To access the volume desired during this operating period and required for best utilization of the log transfer site.
- * To access those areas rated high by TLMP for recreation and sport hunting and fishing. These are, principally, the Whitestone Harbor and the lower Game Creek areas. Although developed recreational facilities, eg. cabins, trails, or campgrounds, may not be established during this five-year period, it is anticipated that both area residents and other accessing the area by ferry and plane into Hoonah will use these newly-opened areas extensively.
- * To meet current economic and social needs of area residents. A close association between the communities of Hoonah and Mt. Bether exists. In addition to a complex of social relationships, the two communities are economically associated through trade and by the employment of Mt. Bether residents in



Hoonah. Agricultural marketing of products and jobs are, of course, benefits to Mt. Bether residents. In turn, Hoonah derives considerable trade benefits from the adjacent community and depends upon skilled craftsmen residing in Mt. Bether for plumbing, electrical work, carpenter services, cannery workers, and others. This association of the two communities has developed despite the extreme difficulty of accessing the Mt. Bether community across the extended Game Creek tide flat. At the request of the Hoonah City Council, planning for 1981-86 development on northeast Chichagof Island has been conducted jointly between the IDT and representatives of both communities. While the planned road into the Game Creek drainage will not access the Mt. Bether community, it will provide opportunity for the community to construct a road connection, thereby facilitating the desired association of the two communities.

Other benefits to area residents are discussed in Section III (Socio-economic Effects).

FRESHWATER BAY MANAGEMENT UNIT

The following drainages are included in the proposed plan: Game Creek, Seal, Pavlof Ridge, Kennel, East Point. Kennel, Pavlof Ridge and East Point are LUD III; the remaining VCUs are LUD IV. Fifteen units were reduced in size to meet clearcut size direction.

Alternatives 1 and 8 (modified to improve resource protection) were selected for implementation in these four VCUs. Although this area has high wildlife values, wildlife impacts were minimized through areas identified for habitat retention.

The recommended action proposes harvest of about 86 MMbm in VCUs Seal, 215, with about 49 miles of road. An estimated 73.8 MMbm remains for additional entries. The proposed action for this area includes a log dump site at the mouth of Seal Creek for about 15 MMbm, with an additional 71 MMbm being hauled to the presently active Kennel Creek log transfer site. A road connecting Seal Creek with the Kennel Creek log transfer site was considered, but rejected because of added costs and high fish and wildlife impacts.

Two units in the Seal Creek drainage are recommended by the IDT to exceed 100 acres in

size. Unit 7 evidences longterm blowdown beyond that of the major blowdown in 1968. The proposed unit boundary encompasses the gross blowdown area and would constitute a 186 acre cutting unit. The alternative is a smaller unit which would increase blowdown in adjacent uncut areas. Since this timber would decay by the next entry, this volume would be lost as usable resource.

The second area in Seal Creek recommended to exceed 100 acres is Unit 3. One-third of the unit was blown down in 1968. Numerous small patches within the unit are down and the edges of the large blowdown area appear to be blowing down as well. A 154 acre unit will salvage this volume and reduce potential for continuing loss.

Timber harvested from Game Creek (approximately 80 MMbf) will be hauled to the Hoonah log transfer site, requiring 55 miles of road. About 110 MMbf remain for re-entries. Alternative 1, modified to minimize resource conflicts, was selected for this VCU.

TENAKEE INLET MANAGEMENT AREA

Salt Lake Bay and Fifteen Mile Creek will be entered for timber harvest. Salt Lake is LUD III; Fifteen Mile is LUD IV. Two units in Fifteen Mile were reduced to meet clearcut size regulations.

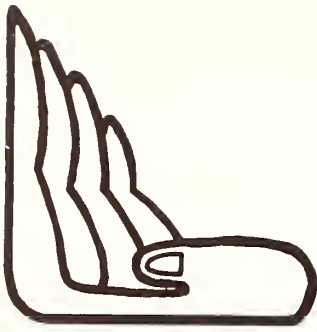
About 26 MMbm will be harvested from this management area with about 19 miles of road built; 42.1 MMbm remains for future entries.

Modifications of alternatives 1 and 8, to reduce resource impacts, were selected for this area.

Eight log transfer sites were evaluated, three in Tenakee Inlet and five in Salt Lake Bay. Because of high marine productivity the three Tenakee Inlet sites were discarded even though these would significantly reduce log transfer costs. The site selected on the northeast shore of Salt Lake Bay is the one recommended by U.S. Fish and Wildlife Service.

CRAB BAY MANAGEMENT AREA

Finger Creek, allocated LUD IV, is the only VCU to be entered in this management area. About 17 MMbm will be harvested over about seven miles of road; 48.9 MMbm will remain for subsequent entries. One



unit was reduced to meet clearcut size direction from National proposed regulations.

Alternative 1 was selected in developing the proposed action in this area. This area has high fish value with some particularly sensitive areas. These areas were, however, given adequate protection through retention.

The proposed action has a log transfer site at the mouth of Finger Creek. This LTS will be the site of experiments in techniques to mitigate adverse impacts of debris in the water. An under water net to collect loose bark is proposed.

CORNER BAY MANAGEMENT AREA

Timber harvest in this plan will be in VCU's Trap Bay and at South Passage Point, both allocated LUD IV. About 20 miles of road will be built to harvest 27 MMbm. Considerably more volume may be taken if the 1968 blowdown timber is salvagable; 171.1 MMbm remains for later entry. Two units at Trap Bay have been reduced in size from original proposals.

Alternative 2 was emphasized in this area to meet high visual needs. Wildlife concerns, considered significant, were also addressed. Alternative 1 was chosen for management in the back of two drainages.

A log transfer site at Trap Bay, operated from the Corner Bay camp with crew boat transport, is proposed.

KADASHAN MANAGEMENT AREA

There is only one VCU in this management unit, designated LUD III. This plan includes harvest of about 28 MMbm from the main Kadashan River Drainage, primarily above the Hook Creek confluence; 88.4 MMbm remains for later harvest. One cutting unit was reduced in size to meet direction for clearcut maximum sizes. Roading options are discussed below.

Alternatives 1 and 8 were used as the base in developing the proposed action. However, it was recognized that this is a LUD III area with very high fish and wildlife values. These concerns were given more than normal emphasis in modifying Alternatives 1 and 8. Special attention was given to fishery concerns in unit layout. Wildlife concerns were mostly alleviated by identified retention zones.

The proposed operation would be out of the Corner Bay camp with the log transfer site at Corner Bay.

Two options exist for the road system connecting Kadashan with Corner Bay. One option is a road around the front on the Tenakee Inlet side. The other option is through Hook Creek.

The front road would come around the front of the ridge separating Corner and Kadashan Bays. Efforts would be made to minimize visual impacts; while the road would not be visible from the waterway, the location of the borrow source (rock pit) is of concern. Impacts to fish and wildlife would be reduced by locating the road as far back from the river, estuary, and beach as possible.

Advantages of the front road are: 1) while construction costs are similar, maintenance costs would be less; 2) the front route would be snow free for longer periods, allowing longer operating periods; and 3) this system will have to eventually be constructed at some later date to access the ridge front timber.

The Hook Creek Road would be constructed over the Hook Creek pass (500 feet elevation) from Kadashan to Corner Bay.

Advantages of the Hook Creek road are: 1) lower likelihood of visual impacts; 2) lower fish and wildlife impacts; and 3) part of the road will need to be constructed later for harvesting in Hook Creek.

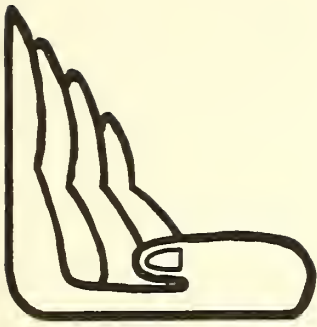
An agreed-upon road location has not been made at this time, pending further IDT review on the ground and more public involvement.

KELP BAY MANAGEMENT AREA

Cutting units are proposed on Catherine Island and Portage Peninsula, designated LUD III and LUD IV. About 30 MMbm will be hauled over 36 miles of road to a log transfer site at Hanus Bay. This will require reactivation of the Hanus Bay log transfer site and campsite; 193 MMbm remains for later entry. One unit on Catherine Island was reduced in size to meet the 100 acre clearcut size maximum.

Alternative 2 has been selected as the base from which to develop the recommended plan for Catherine Island. This decision was based primarily on high visual sensitivity.

Alternative 1 is the basis on which the proposed plan was developed for Portage Peninsula.



EAST KUIU MANAGEMENT AREA

Timber harvesting will be in Alvin, Reid, and No Name Bays, Three Mile Arm, Seclusion Harbor, and Port Camden. All are LUD IV. The recommended action includes harvest of 130 MMbm and construction of about 74.7 miles of road. Log transfer sites will be located at Port Camden and No Name Bay; 750 MMbm remains for later entry.

Alternative 5, in accord with the following rationale, was selected as the recommended action for this management area.

After extensive office analysis of all available data and field investigation of the management area over two field seasons the IDT, with input from satellite members as required, developed a plan for a first entry harvest of approximately 240 MMbm (roughly one third of the operable CFL). Each harvest unit, road and transportation facility was reviewed by the IDT who adjusted or developed them as necessary to be acceptable from an interdisciplinary viewpoint. Four development alternatives were then designed to harvest 130 MMbm from the 240 MMbm available. Alternatives 4 and 5 are based upon the approach of developing a main trunk haul road from the Port Camden area as far south as possible to access a large area for multiresource management. This approach spreads out timber harvest activity for the 1981-86 operating period, as much as possible, to lessen impacts on wildlife, fisheries, visual, and recreational resources. Alternatives 6 and 7 are designed to concentrate timber harvest activity in as small an area as possible by harvesting 130 MMbm from the northern portion of the management area and reducing costs with a shorter road system.

The IDT was provided with alternative costs for the various transportation schemes by area transportation planners. An analysis of the proposed log transfer facilities (land to water), based upon reports from U.S. Fish and Wildlife Service and National Marine Fisheries Service was developed and utilized to rate the acceptability of each proposed site. Based upon this information, the IDT developed a rationale for selection for a recommended action considering the following:

1) Transportation costs for the various alternatives ranged from \$10,094,524 to \$13,229,817 but due to the gross nature of the data used to develop these costs a 20-25 percent difference was not enough to justify selecting an alternative based upon cost alone.

2) The advantage of management access to an extensive amount of the management area via an extended mainline trunk road was, although difficult to qualify of importance to the future management of the area.

3) Although it was necessary to plan to harvest less than the available first entry CFL (240 MMbm) it would be advantageous to spread this harvest out over as great an area as possible to lessen the potential environmental impacts.

4) Proposals for log transfer sites or other facilities should not be eliminated from consideration for environmental reasons if they appear to have important management or economic value until extensive coordinated study and analysis by all concerned agencies and disciplines provides adequate information to support a decision.

The IDT presented the alternatives to the Stikine Area staff without identifying a preferred alternative. They felt that, in developing 240 MMbm utilizing the interdisciplinary process, regardless of how the units were arranged resource values would be adequately protected and development costs would be reasonably similar.

The Stikine Area staff selected Alternative 5 for the following reasons:

1) The management advantages of an extended mainline trunk road; 2) The ability to spread the harvest unit over a greater area without extensive cost increases and still obtain the mainline trunk road; 3) The opportunity to extensively study the proposed log transfer sites at Port Camden and No Name Bay with the knowledge that if either one proved unfeasible the existing log transfer site at Rowan Bay could be used in its place.

The IDT and staff considered it important to develop the transportation system in such a manner that the operator as well as the Forest Service can develop use patterns with compensation for logistic, economic, and ecological changes as they occur. Alternative 5 provides this flexibility without severely impacting the Port Camden/Bay of Pillars isthmus with continuous truck traffic or development of an additional camp in East Kuiu. Pulp logs can be taken north to Sitka via the Port Camden log transfer site and sawlogs south to Wrangell via the No Name Bay log transfer site. The log transfer site at Rowan Bay can be used should circumstances prevent the use of East Kuiu log transfer sites.

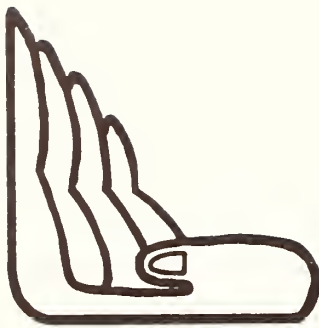


TABLE 16. COMPARISON OF RECOMMENDED ACTION AND ALTERNATIVES

ALTERNATIVES:	#1	#2	#3	#4	#5	#6	#7	#8	RECOMMENDED ACTION
Total Volume Identified in Alternative (MMbm)	580	349	270	130	130	130	130	554	527
Percent of Operable ^{1/} Timber Cut Previously or As proposed (based on TLMP data)	41	30	22	15	15	15	15	29	23
Total Number of Units ^{2/}	232*	506*	516*	61	61	61	61	291	514
Average Unit Size ^{3/}	73	39	35	89	89	90	90	68	55
Miles of Road ^{2/}	209*	297*	387*	74	75	62	64		369
Number of Camps	3	7	10	1	1	1	1	8	8
Number of Log Transfer Sites	4	9	12	2	2	1	2	7	10
Plan Implementation Costs (public investment required) (\$ million)	0	13	25	1	1	0	0	4	13

^{1/} -- based on TLMP data

^{2/} -- * Indicates extrapolation from sample results to develop estimates reflecting total volume

^{3/} -- Average unit sizes have been reduced from data displayed, in response to NFMA direction



Effects of Implementing Recommended Action

a. Soils

Numerous hazards contained in Alternatives 1, 2, and 8 were deleted in the modifying process. Significantly less road will be constructed than in Alternative 3, but 10-12 miles more than contained in alternatives 6 and 7.

Timber will be harvested from about 28,000 acres (not significantly different than other combinations of and Stikine options). Normal logging operations will create an estimated 5 percent to 10 percent of bare mineral soil which will be more erosive than undisturbed sites. While sedimentation in V-notches will be greater than for other areas, overall increased sedimentation should be minimal, depending on stream proximity, soil type, and size of disturbance. Logging disturbances are usually less than one-fourth acres. The primary impact will be loss of soil productivity on the disturbed site, though this impact is also minimal if disturbed areas are small and dispersed.

Erosion (sedimentation) increases and site productivity is reduced where roads are constructed. Sedimentation from roads will be minimized through grass seeding and proper road engineering, including road location.

In most areas accelerated surface erosion will be short term (less than about five years).

Soil concerns in this plan are primarily related to mass failures from logging or roads. Harvesting is proposed in some areas where slopes may exceed 75 percent. About 1200 such acres have been identified on the ground or by stereo photometry. These areas may pose extreme hazards or may not be problems at all, depending on factors such as soil type, slope configuration, and sub-surface (slip plane) conditions. Detailed ground review will occur before a decision is made. Confirmed areas of high hazard will not be logged.

On-ground review of many areas will be made to assure that adequate protective measures are taken for the protection of soils and other impacted resources.

b. Silviculture.

Maximum harvest unit size in the proposed action is 100 acres in conformance with WFMA standards.

While the best choice of unit location and configuration was made in accord with demonstrated windfirm guidelines, redwood unit size adds risk to successful achievement of windfirm boundaries. The number of units involved is low in proportion to the overall number of harvest units.

Site index as an indication of soil productivity is believed to be reduced by approximately 20 units as a result of windthrow.

Studies indicated that irregular shaped clearcuts smaller than 50 acres are more susceptible to mistletoe reinfestation.

Silvicultural benefits achieved in the plan include:

1. Minimized blowdown potential in most proposed units.
2. Sufficient volume retained on the road systems to allow future management as displayed below:

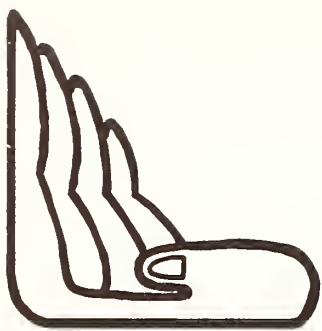
Table 17: Volume Available After Harvest

	TOTAL	RETENTION	HARVEST	REMAINING AVAILABLE
Volume	2126	333	525	1245
%	100	16	25	59

3. Interconnecting road systems allow for efficient post-harvest timber management practices including such cultural practices as pre-commercial thinning, mistletoe control, planting and release work, as well as salvage of blowdown material.

4. Two intermediate cutting units are planned. One is a commercial thinning unit in the Finger Creek drainage. The other is a commercial thinning unit and overstory removal in Upper Game Creek.

In addition, two areas are proposed for partial cutting. The first is located in Kennel Creek and is intended to permit study of tree roots and soil stability on oversteepened slopes. The second partial cut is Trap Bay where partial cutting may reduce visual impacts. The Forest Sciences Lab will monitor planned partial cuts.



c. Wildlife.

In the refining process involved in developing the IDT recommended action, proposed unit design and layout were modified to reduce adverse impacts to wildlife and other resources. Cutting in some sensitive habitats has been deferred to lessen the localized impacts and to spread the impacts over time. An attempt has been made to disperse the units in some areas by breaking up clusters of closely spaced units and to provide adequate corridors for wildlife. Critical wildlife habitat, such as deer winter range, bear and waterfowl concentration areas, and areas of high use by furbearers have been avoided to the extent possible. Much of this critical habitat has been placed in the retention category.

An unavoidable consequence of the proposed action is the conversion of mixed-age, old-growth habitat into even-aged regeneration.

A discussion of the effects of implementation of the IDT's recommended action plan on the wildlife habitat of the various management areas follows:

Freshwater Bay Management Area contains high value wildlife habitat. Most critically important habitat in this management area is protected through designation of wildlife habitat management units and retention areas. Significant adverse impact to sensitive wildlife habitat has been avoided by proposing the Seal Creek log transfer site at the north side of Freshwater Bay rather than an interconnecting road system through the estuarine flats at the head of Freshwater Bay.

Although the large Game Creek drainage has important deer, brown bear, furbearer and waterfowl habitat, major conflicts have been avoided by placement of units away from the river and outside the coastal deer winter range.

The Salt Lake Bay Management Area may be impacted more significantly by the road system proposed than by the cutting units. Roads between the log transfer site and the west end of the Salt Lake Bay chuck and along the valley into 15-Mile Creek impact 23 acres of critical deer winter range and high-use deer habitat. Two proposed rock pits and construction of a maintenance facility (no housing facility proposed) would increase this impact.

The north side of the 15-Mile Creek drainage would be logged fairly heavily, resulting in loss of

habitat diversity through concentrated harvest of old-growth timber. However, wildlife travel corridors from upper elevation summer habitat and lower elevation winter range are provided. The most sensitive wildlife zones along the coast of Tenakee Inlet are protected with retention zones.

Crab Bay Management Area would be entered during 1981-86 in only one drainage (Finger Creek). Proposed roads would impact about 14 acres of deer winter range. The log transfer site may create additional disturbance although its proposed location is approximately 1,200 feet from an eagle nest tree. The proposed floating logging camp would be located in a non-estuarine tidal flat area. While short-term impact to waterfowl, bear, and furbearers may result, this camp avoids long-term impacts of an upland camp.

Positive wildlife effects may result from proposed thinning of an 80-year old harvested area. Improved deer winter range and habitat research data are expected benefits.

Corner Bay Management Area is included in the recommended action with proposed harvest in Trap Bay. Proposed roads include 4,200 feet of beach road and an additional nine miles of road in low elevation deer winter range. With construction of a maintenance camp, a total of approximately 54 acres of deer winter range are thus impacted by construction activities. Eagle nesting trees along the beach fringe could also be impacted by the road although the log transfer site has been moved in the proposal to avoid conflict with an eagle nesting tree. Bear use and furbearer denning may also be disturbed by roading and other beach fringe activities.

The Forest Sciences Laboratory proposals to extend two units in the Trap Bay drainage to both sides of the stream are included in order to study effects of logging on fish habitat; studies may also be initiated to investigate the effects on bear and furbearer use of these areas.

Kelp Bay Management Area proposal includes harvest on Catherine Island and Portage Peninsula. Reactivation of the Hanus Bay logging camp, log transfer site, and existing roads (including the causeway and bridge between Hanus Bay and Portage Arm) would not pose new impacts to habitat but would result in human disturbance to several species. Roading south of Local Creek on Catherine Island impacts 36 acres



of deer winter range, furbearer denning sites, and bear habitat. This road may infringe on at least one eagle tree buffer zone and will require site specific review.

Most proposed cutting units on Catherine Island and Portage Peninsula pose minimal impact to wildlife habitat. Some larger units are proposed at the head of certain valleys to compensate for increased protection of more sensitive areas nearer the coast.

Kadashan Management Area will be harvested from the Corner Bay Logging Camp. The Kadashan drainage has high value fish and wildlife habitat as identified in TLMP and by the Alaska Department of Fish and Game. Recognizing these and other concerns, special considerations were given to timber development proposals in this area.

Two possibilities exist for roading access from the camp to the proposed cutting units. One is a road through the Hook Creek Valley while the second is a road connection along the coastal zone on Tenakee Inlet. The latter alternative would impact approximately 13.5 acres of low elevation deer winter range (exclusive of cutover areas) in an area that has already been affected by three large, earlier cutting units.

Design of individual units proposed for the Kadashan drainage is acceptable for wildlife management. Much of the east valley wall will be converted to an even-aged stand, reducing habitat diversity. No units are planned in the timbered areas adjacent to the extensive estuarine flats of Kadashan Bay.

Whitestone Management Area was rated moderate to low for wildlife, as reflected in the TLMP LUD IV ratings in the nine VCUs within the area, however, individual species ratings were high for deer, brown bear, and furbearer. A portion of the critically important habitats have been protected through retention classification. Construction of approximately 71 miles of road is proposed, posing impact by removal of approximately 426 acres of habitat (estimating impact on six acres per mile of road, including turnouts).

Cutting units proposed in three watersheds in this Management Area total about 4,600 acres. Considering the cumulative effects of cutting units, road construction, and development of related facilities, potential impacts may affect about 21 percent of the three VCUs entered.

East Kuiu Management Area. Timber harvesting will occur on Camden Peninsula, in Three Mile Arm, Seclusion Harbor, and No Name, Alvin and Reid Bays. Overall, approximately 86 units will be harvested with an average of 65 acres per unit. Fifteen percent of the total operable Commercial Forest Land in the management area will be harvested in the 1981-86 operating period. Seventy-five miles of permanent road will be constructed. Another 15 miles of temporary (spur) road will be required.

Marine, estuarine, and terrestrial habitats will be affected to some degree by the proposed action. Waterfowl, eagles, black bear concentrations, and deer wintering habitat were emphasized by the interdisciplinary team in developing the proposal.

Waterfowl and wildlife may be displaced to more remote locations as a result of construction, timber harvesting and road traffic. The significance, duration, or magnitude of this is not known.

Hunting pressure on some species might increase locally because of improved access but would generally tend to disperse hunting away from the area. Overall, the harvest of bear, wolf, and waterfowl by logging camp inhabitants would remain relatively stable. Development, as proposed would not necessarily attract other visitors to the area, however, over time a commercial recreational enterprise might be attracted to the area as a result of the extended road system.

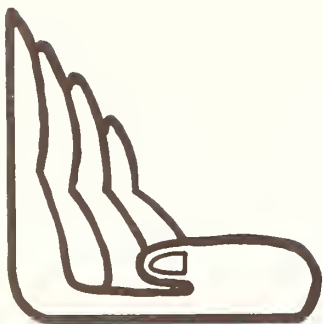
Modifying the size of harvest units to a maximum of 100 acres and increasing the size of smaller units to achieve contract volume requirements resulted in minor variations to the effects on wildlife as projected in Alternative 5.

For the East Kuiu Management Area, the following differences on key deer winter ranges are noted:

Port Camden: Added 77 acres unit immediately south of the proposed log transfer site and deleted 86 acres one mile east.

Three Mile Arm. The proposed action reduces the acres to be harvested in 1981-86 from 862 acres to 657 acres.

Salt Lagoon - Seclusion Harbor Drainage. Increases the acres to be harvested in 1981-86 from 948 acres to 1,004 acres.



No Name Bay. Overall adds five new units at low elevations proximate to tidewater with a net increase of 140 acres.

Alvin Bay. The proposed action adds one new unit but substantially reduces the size of other units proposed by the interdisciplinary team.

Reid Bay. Adds one additional unit of 64 acres.

Specific impacts on wildlife habitat and high risk situations within these management areas are detailed in wildlife reports available from the Chatham and Stikine offices. An on-the-ground review by wildlife biologists will be conducted during field layout of units and roads identified as having a high risk of adverse impact or otherwise requiring review.

The analysis of impacts on fish habitat, resulting from proposed development, was based on aerial photograph interpretation of a logging plan developed for earlier drafts. Subsequent changes in the proposed plan have not substantially altered the following analysis.

d. Fisheries

The comparison of the recommended action with the other alternatives is shown in table 18. The effects of the recommended action on Chatham Area streams are shown by watersheds in table 19. These tables show the preferred action to be relatively sensitive to environment concerns while still allowing a high percentage of timber cut. The percent of watershed cut is higher than even Alternative 1, yet the percent of streams cut to both sides and the amount of Fish Habitat Sensitivity Zones in logging units is less than Alternative 2 or 8. Length of stream cut one or both sides compares with Alternative 2 and percent of Fish Habitat Management Unit in logging units is less than even Alternative 3. Projected impacts to the fishery habitat if this action is implemented are greater than Alternative 3, but less than Alternatives 1, 2, or 8.

The Stikine Area did not portray the tabular data shown in tables 11 and 12. But, the discussions of the "Effects of Implementation" section relate to the general effects on fish habitat and describe the role of fishery biologists in the planning process.

Most units have been laid out on photos and ground verification is essential. Impacts will occur but will be ameliorated by participation of the biologist in unit layout, location of roads, log dumps, and landings.

On-the-ground reviews will be done for road systems (proximity to stream and all bridge and culvert locations). All units in Fish Habitat Management Units will be reviewed on-the-ground and those in Fish Habitat Sensitivity Zones will be given thorough evaluation before harvest.

Major management concerns to be resolved by further IDT field investigations are:

Whitestone Harbor

1. Three acres FHSZ in Gartina drainage.
2. Eleven acres FHSZ in the S.W. Whitestone area.

Freshwater Bay

1. Seal Creek full bench road.
2. Kennel Creek road to be reopened.
3. Kennel Creek units to be evaluated more thoroughly after evaluation of impacts from previous logging in this drainage.
4. Lower Game Creek bridge.

Tenakee Inlet

1. Three acres of FHSZ.

Crab Bay

1. Sixteen acres of FHSZ.

Kadashan

1. Hook Creek road (presently preferred to frontal road).
2. Frontal road proximity to salmon spawning and rearing habitats.
3. Twenty-five acres of FHSZ.

Corner Bay

1. Road location in Passage Point drainage.
2. Twenty-four acres FHSZ in Flat Fork watershed.

Kelp Bay

1. Ten acres FHSZ in Local Creek drainage.



East Kuiu Management Area

The following units require further fisheries input (adjacent to fish streams or tributaries to fish streams):

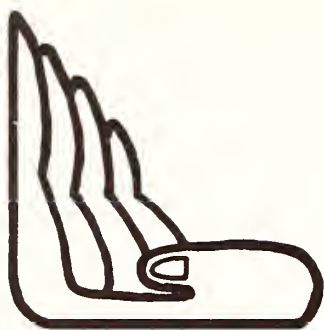
1. Pt. Camden: PCI (Unit #202); Slippery Creek (#203, #204, #209, and #210); Hiller Creek (#206)
2. Three Mile Arm: Spring Creek (#219); Unnamed (#221, #223); Apricot Creek (#224)
3. Lagoon: Toenail Creek (#226, #227); Battaan Creek (#229); Grapejuice Creek (#231, #233)
4. No Name Creek: Rojo Creek (#234); Failure Creek (#236, #237); Waxflower Creek (#238); Shotgun Creek (#244); Fault Creek (#245)
5. Alvin Bay: Waffle Creek (#248); Unnamed (#252); Little Creek (#255); Top Creek (#258); Middle Creek (#260)

TABLE 18 Comparison of Fisheries Impacts on Chatham Area*

ALTERNATIVE NUMBER	1	2	3	8	RA
% OF WATERSHED CUT	13.4	9.0	7.0	10.0	13.7
LENGTH OF ROAD (KM)	14.0	14.5	13.1	14.8	16.0
NUMBER OF BRIDGES (per watershed)	43	45	40	46	51
NUMBER OF CULVERTS (average per watershed)	60	63	57	65	71
LENGTH OF STREAM TO BE CUT BOTH SIDES (total KM)	17.4	12.2	2.6	3.8	8.0
% OF STREAM TO BE CUT BOTH SIDES	8.3	6.2	1.3	2.2	3.8
LENGTH OF STREAM TO BE CUT ON ONE OR BOTH SIDES (total KM)	48.7	38.0	16.0	58.0	36.0
% STREAM CUT ON ONE OR BOTH SIDES	23.0	19.0	8.0	33.0	17.0
ACRES FHMU HARVESTED	382	267	189	580	294
% HARVESTED IN FHMU	37	37	35	68	33
ACRES FHSZ HARVESTED	140	73	25	81	50
% HARVESTED IN FHSZ	14	10	5	10	6

RA = Recommended Action

* Average value of all units, excluding Game Creek.



KEY FOR TABLES FISHERIES DATA PER WATERSHED

Column	Data Provided
1	The watershed areas were determined with a polar planimeter on 1:63,360 maps.
2	Percent of watershed proposed for logging is area in a watershed to be logged divided by the total area of that watershed.
3.	Length of road within each watershed was measured from 1:63,360 expanded scale maps.
4.	Total stream length comprises known and suspected fish habitat above and below barriers to fish passage. Stream lengths were measured on 1:63,360 maps.
5 & 6	Average number of bridge and culverts on the proposed road system that will cross streams, tributaries, and drainage areas based on historical patterns in the Chatham Area. One mile (1.61 km) of road contains on the average: 7 corrugated metal pipe drainage structures (culverts); 4 minor bridges (native log stringer type, 6-15 m long.); and one major bridge greater than 15 m long.
7.	Percent of total stream length with proposed logging along either one or two sides of the stream.

8. Percent of total stream length proposed to be cut on both sides.
9. Total acreage of Fish Habitat Management Units (FHMU), estimated from inspection of each proposed cutting unit on aerial photographs. In the context of this study, a FHMU is an area, within a proposed cutting unit, that contains salmonid (resident and anadromous) fish habitat and uplands in which development will likely affect fish habitat.
10. Percent of the total area proposed for logging that comprises FHMU.
11. Total acreage of Fish Habitat Sensitivity Zones (FHSZ) estimated from inspection of each proposed cutting unit on aerial photographs. In the context of this study, a FHSZ is an area, within a proposed cutting unit or at a bridge site, that contains salmonid (resident and anadromous) habitat that is important or critical for fish production and/or sensitive to development activities.
12. Percent of the total area proposed for logging that comprises FHSZ.
13. Numbers appearing in tandem (ie. 7/14) indicate value for pre-1981 logging vs. value by the end of the 1981-86 operating period.

Table 19 - EFFECTS OF RECOMMENDED ACTION ON FISH HABITAT.

STREAM NAME	ADFG NUMBER	WATERSHED AREA	% HARVESTED	ROAD LENGTH (KM)	STREAM LENGTH (KM)	NUMBER OF BRIDGES	% OF STREAM CUT ON 2 SIDES	% OF STREAM CUT ON 1 OR BOTH SIDES	ACRES CUT IN FHMU	% OF HARVEST IN FHMU	ACRES CUT IN FHSZ	% OF HARVEST IN FHSZ	NUMBER OF CULVERTS
KADASHAN	112-42-25	59.8	8	31.7	22.8	100	0	13	585	51	40	3	140
FRESHWATER	112-50-30	101.3	3	20.3	44.5	65	1	3	126	17	43	6	91
GAME CREEK	113-31-13	128	9	45.3	44.8	142	0	14	1449	51	349	12	198
KENNEL CREEK	112-50-20	33.8	4/14	14.0	11.2	45	0/11	2/22	189	32	3	1	63
FLAT FORK	112-12-34	20.2	13	12.5	10.1	80	7	27	317	48	15	2	112
SUNTAHEEN	114-27-15	35.7	15	20.8	12.3	69	3	32	440	34	129	10	95
SEAL CREEK	112-50-38	30.0	12	13.0	13.1	40	15	32	348	40	142	16	56
GARTINA	114-31-9	21.0	24	37.7	10.0	118	4	6	439	35	78	6	165
LOCAL CREEK	112-11-15	16.8	14	11.0	9.2	70	4	9	207	37	30	5	98
FINGER CREEK	113-55-1	19.9	12	14.6	6.0	50	0	38	135	24	31	5	70
N. FRESHWATER	112-50-32	37.6	2/4	5.0	7.1	18	0/4	20/35	54	24	10	4	25
S.W. FRESHWATER	114-27-18	15.0	17	11.2	10.0	35	10	24	411	65	86	14	49
HILLMON	114-32-16	9.7	13	12.2	4.5	39	0	4	102	32	2	1	55
PASSAGE POINT	112-41-1	7.0	19	6.9	3.3	45	27	27	82	26	17	5	63
5-MILE	112-45-1	12.5	13	5.4	4.9	35	0	0	22	5	1	1	49



e. Visual and Recreation

Many of the areas proposed for harvest lie along highly sensitive travel corridors, and popular small boat anchorages, and can be seen from local communities. The recommended action protects to a large degree the visual resource associated with the ferry and tour ship routes along Chatham and Icy Straits, the popular small boat anchorages at Whitestone Harbor, Spasski Bay, and Pavlof Harbor-Lake, and Cedar Cove and areas visible from Hoonah, Tenakee Springs, and Angoon. Scenic values of small boat routes will be protected to a lesser extent in some cases upon entering and leaving the above small boat anchorages in some middleground and background viewing zones.

The Visual Quality Objectives of Partial Retention to Modification (see glossary) will be adopted as seen from the Ferry Route in the Catherine Island (Peril Strait) and Tenakee Inlet areas and from the small boat route in the Kelp Bay (Portage Peninsula) area.

Adopted Visual Quality Objectives in the remaining harvest areas will not alter the visual resource beyond Modification to Maximum Modification as defined by the Visual Management System (USDA Handbook No. 462 - also see glossary). In addition, all areas seen from road systems developed in this plan will be managed under the adopted Visual Quality objective of Maximum Modification.

Short term negative effects resulting from this plan will include moderate contrasts in color and texture in some middleground and background zones in public sensitive areas. Both short term and long term effects of the specific location of future associated development involving camps, roads, rockpits, and log dumps will determine the degree of these effects. These facilities are located in the next planning phase (project).

There will be long term negative visual impacts depending on intensity, size and shape of harvest units and timing of future entries in area with moderate to low viewer sensitivity resulting in loss of inherent natural qualities of the landscape

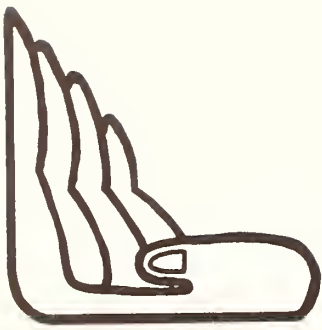
It is likely that subsequent future entries will happen in the same areas after the 1981-86 period. However, over a long term period, new entries tend to have less visual impact because of the variety of regeneration growth stages present (more landscape complexity) resulting in a landscape better able to absorb changes with less visual impact.

Recreational opportunities associated with a natural wildland experience, i.e., solitude, etc., will largely be lost because of the intensity of development involving timber harvest and associated permanent road systems. These road systems are generally located under this plan to facilitate economic removal of timber and in many cases are not always situated to best take advantage of specific recreational points of view especially in TLMP Land Use Designation (LUD) IV areas.

However, these road systems do provide increased recreational access. The Whitestone Management Area would be accessible by road from Hoonah to Whitestone Harbor and Freshwater Bay. Opportunities for beach associated activities, e.g., driftwood collection on beaches, hiking in spectacular alpine areas, fishing, hunting and other recreational activities would be provided by the road system to Whitestone and Game Creek drainage. It is likely the future ferry terminal at Hoonah may influence the development of hiking trails, trail shelters, and recreation vehicle overnight campsites by the Forest Service.

The proposed roads in the East Kuiu Management Area will provide access to a large area and will make it possible for more recreationists to use inland areas. Residents of the Rowan Bay camp will use the road for recreation purposes (assuming the availability of vehicles) accessing inland areas as well as all major saltwater bays of East Kuiu from Port Camden south to Reid Bay, therefore, providing a great variety of recreation opportunities (hunting, fishing, camping, hiking, cross country skiing, beachcombing, nature observation, etc.) However, the positive effects of increased access would be diminished somewhat by the intensity of proposed landscape alterations which would detract from enjoyment of the natural surroundings. To maintain high scenic values associated with public use saltwater areas, a trade-off regarding visual values was made under the proposed action for most road systems including the road contiguous to Hoonah.

In the East Kuiu Management Area the impact of timber harvest will be apparent from saltwater viewpoints with the exception of Port Camden. In all cases, however, units reflect the naturally appearing landscape, will not be viewed from major travel routes, and meet recommended visual quality objectives. Inland harvest units will be visible from the proposed road system. They will, however, be viewed as middleground and foreground by relatively few recreationists and will therefore have low visual sensitivity.



Several other aspects of this plan will enhance recreation opportunities and somewhat reduce potential negative visual impacts. Use of a floating logging camp proposed in the Crab Bay Management Area would reduce visual impacts on the scenic estuary at the mouth of Finger Creek. A similar location of the log transfer site at Hoonah in the Whitestone Management Area avoids visual impacts and displacement of the popular small boat anchorage at Whitestone Harbor.

The proposed log transfer sites at No Name Bay and Port Camden will provide saltwater access to the entire Kuiu Island road system from the east side of the island. Both sites are effectively screened by land form or islands and will not be visible from beyond their immediate vicinity.

The management of the visual resource in highly sensitive water-oriented public zones is the primary benefit of this plan. In compliance with TLMP, the important aesthetic qualities within the management areas associated with recreational travel routes and use areas and viewing areas from local communities will be largely protected. The remaining areas which are used and seen less frequently and thus do not carry highly protective Visual Quality Objectives, will be managed with emphasis on harvest economics.



Monitoring Requirements

Soils

The Forest Service, through small scale research studies incorporated in the 1981-86 operating plan, is actively pursuing the development of better management practices for sensitive soil areas. With the expanded use of skyline systems during this sale period, new resource protection techniques may be available. Where suspension of logs is attainable, harvest of severally V-notch dissected slopes and partial cutting on unstable slopes may be possible and less impacting than normal high-lead harvest. To evaluate the feasibility of skyline harvest on these sensitive soil areas, two such areas are planned for harvest. Detailed study plans will be developed for each area prior to harvesting and an evaluation of the degree of resource protection provided will be made. If, upon field investigation, high potential for severe adverse impacts is present these areas will be deleted from the harvest allotment.

Fish

A monitoring plan during implementation of timber harvest will measure the following activities:

- * Instream activities that influence fish habitat such as installation and removal of drainage structures, will be briefly monitored for sediment production and habitat disruption at selected sites.
- * Long term effects of logging on alluvial fans and floodplains are currently being monitored. These studies may be extended through 1981. Changes in channel morphology, debris loading, and the extent of flooding will be measured in order to formulate Best Management Practices.
- * An interagency fishery research program has been prepared that will monitor three streams to obtain information on how to protect and improve freshwater and estuarine habitat of fish and invertebrates in Alaska. Participants in the study are the Forestry Sciences Laboratory of the Pacific Northwest Forest and Range Experiment Station (USDA Forest Service) and the Auke Bay Laboratory and the Alaska Fisheries Center (National Marine Fisheries Service).
- * Existing conditions at salmon streams in areas proposed for logging will be measured. Streams considered for interagency fisheries study will receive intensive baseline investigations;

other streams will be surveyed to the level necessary to detect post-development changes in physical aspects of fish habitat.

Water Resources

Public Law 92-500 gives direction to develop guidelines for identifying and evaluating the nature and extent of non-point source pollutants and procedures to control pollution resulting from silvicultural activities.

In cooperation with the U.S. Geological Survey, the Forest Service has been monitoring water quantity and quality from undisturbed watersheds since 1966. In the last few years, other stations have been initiated by the Forest Service to sample water quality more intensively in order to better define non-point pollution as addressed by the Federal Water Pollution Control Act of 1972. During and after road construction and timber harvesting in these watersheds, water quality or quantity changes will be measured.

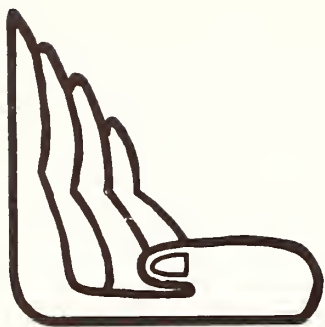
Cultural

Even after completion of archeological surveys, further precautionary measures must be provided in order to meet all legal and research criteria. Because of the density of the vegetation in southeast Alaska and the nature of the resources involved, it is impossible to guarantee that no further cultural resources will be found in areas previously surveyed. To ensure that these possible finds will be protected, archeological observation is recommended for all areas where any construction or ground disturbance will take place.

In the event that previously undiscovered resources are found in the course of such events, activities which may impact the resources must be suspended until the evaluation of the resource is completed and mitigation measures, if necessary, may be developed. It is believed, however, that timely execution of surveillance plans will both fulfill legal obligations and provide the best possible insurance against major disruption of the operating plan due to unexpected discoveries.

Wildlife

Six small clearcuts were designed in critical deer range in order to monitor the impacts of this type of cutting on carrying capacity for deer. Population data will be gathered prior to cutting, and the population will be monitored for ten years after cutting. A control area will be inventoried for populations and monitored.



Visual

Four clearcut units were designed at Finger Creek for the purpose of studying the relationship between blowdown potential and unit design; two units were located in a portion of the 15-Mile Drainage with medium blowdown potential. These units will be observed periodically over the six-year period following harvest to monitor blowdown.

Silvicultural

Surveys of cutover areas, three to four years after harvest, will determine whether or not natural regeneration is occurring. From past experience, 90 percent of cutover units in the ALP sale area reproduce naturally. In most cases, the remaining 10 percent problem areas can be predicted before logging and are usually associated with valley flats and alluvial fans that have youthful soils. The old-growth stands in these areas are not stocked well; salmonberry and devil's club are already present. In addition to youthful soils, high elevation harvest areas, eg. near Kennel Creek, could be problems, as could the edges of snowslides.

The following monitoring and post-harvest management will take place on 1981-86 ALP areas:

1. Within four years of logging reproduction surveys will be made of every logged unit to determine natural regeneration success and need for planting another silvicultural activities to establish a new stand.
2. If found necessary, planting and/or release will be done in these units to get the second growth established.
3. Seeds will be collected from suitable areas near these planting projects to use for growing seedlings at the Petersburg nursery.
4. If post-logged surveys reveal infestation, units will be treated to control the spread of Dwarf Mistletoe. This is accomplished by cutting the small infected hemlock residuals left after logging in order to prevent infection of new growth.

Timber Harvest Activities

Many decisions made in developing the IDT recommended action are based on interpretations made from aerial photos. Therefore, on-ground verification and monitoring is needed. The on-ground

verification process has not been completed and, hence some changes will be necessary. The IDT process will continue throughout the harvest period. This will improve economics, timber harvesting and environmental protection.

An additional monitoring requirement is identified in the Southeast Alaska Area Guide, page 100.

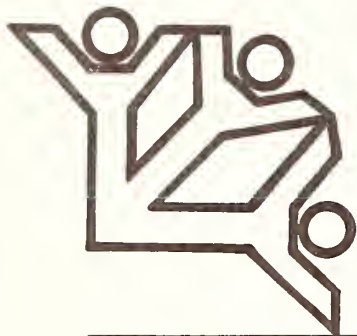
"The use of existing log storage and transfer sites not complying with the policies outlined in the Guide will be phased out. Termination of site use will coincide with current contract expiration or, in the case of long-term sales, at the beginning of the next subsequent five-year rate redetermination period. Alternative sites will be provided in accordance with the Guide."

"Where a non-conforming site and/or facility is considered for use during a subsequent contract or five-year operation period, an IDT study will be made to determine whether adverse impacts of relocating the non-conforming site exceed those resulting from continued use of the existing site. If the adverse impact of relocating a needed facility is judged to exceed that occurring at its present location, the facility will be allowed to remain in use unless the study indicates that management goals will not be met. In such cases, no further use of the facility will be allowed and an alternative site will be provided in accordance with Guide procedures."

The review of log storage and log transfer sites for the 1981-86 operating period will be conducted by a team involving USDA Forest Service, Alaska Lumber and Pulp Company, Alaska Department of Fish and Game, U.S. Fish and Wildlife Service, National Marine Fisheries Service, and others. The review team will make recommendations to the agencies responsible for regulating log storage and log transfer activities.

IV. Consultation with Others





Public Involvement Plan

Beginning with initial planning activities, the interdisciplinary team has sought the involvement of individuals and groups outside the Forest Service. Such participation by representatives of other government agencies, by members of interest groups and organizations, by elected officials of communities, and by individuals is considered a vital element in the land management planning process.

The study plan guiding the 1981-86 planning process includes a detailed public involvement plan. This plan was prepared to assure compliance with legislation and policy which directs public input to the land planning process and to meet specific informational needs of the 1981-86 study. The plan details activities to meet the following objectives:

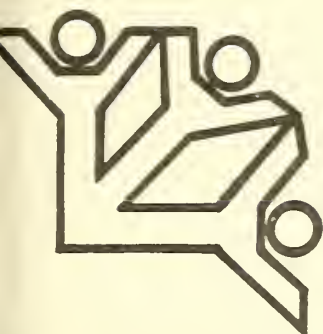
1. Inform the public of the planning process.
2. Involve the public by providing specific opportunities during each planning phase for review and comment.
3. Provide means to expand and/or refine public involvement activities to include all interested groups and individuals and to address issues of major concern.
4. Provide mechanism to incorporate public comments in the planning/decision process and to document responsiveness of the planning team to these comments.

In developing the public involvement plan, the team recognized two important issues to be resolved. First, the timing of past public involvement has been perceived by various groups and individuals to be either too early or too late in the planning process. When too early, information exchanged is tentative and incomplete; when too late, the opportunity to influence decisions is lost. The team resolved this issue by developing a public involvement plan which initiated early contacts but which provides continuing opportunity to update, expand, or correct comments.

The second issue relates to the multiple planning activities in the region over the past few years. Many groups, communities, and individuals have participated extensively in developing such documents and plans as the Southeast Alaska Area Guide, the 1976-81 ALP Operating Plan, the Tongass Land Management Plan, the RARE II study, and others. These participants can reasonably expect that their

views and concerns are "on record" with the agency. At the same time, decisions reached through these various planning activities may have resolved some of their concerns, creating a new "decision environment" for the 1981-86 study. It is reasonable to assume, therefore, that some participants have additional perspectives and information to provide. The team resolved this issue by developing a public involvement plan which initially incorporated public comments from earlier planning activities and then tested to validate or correct the existing "record".

The planning schedule and a summary of public involvement activities is displayed on the following pages.



Public Involvement in the Planning Process

PLANNING STEP	DATE	OBJECTIVE	PUBLIC INVOLVEMENT
A. Initial Planning	Jan-April 1978	Develop public involvement plan. Identification of issues, concerns, management opportunities, and publics.	Meetings with key contacts, community officials, and special interest group representatives.
		Identify criteria for data collection and analysis; for development of alternatives; for selection of preferred plan of operations. Present to public. Determine what information is needed by the public and how they can best be involved.	
B. Collect and Analyze Data	April - Sept. 1978	Advise public of planning process, schedule and IDT function.	Mailing of planning update to interested publics. Community meetings and Open Houses. Key contact IDT field briefings.
	Oct. - Nov. 1978	Obtain data input concerning resource values, established uses, issues and concerns. Advise public of potential cutting areas.	
C. Alternatives	Dec. 1978 - March 1979	Assess Management situation as developed in the Tongass Land Management Plan. Integrate preliminary planning, resource inventories, and public input. Test with public.	Key contact meetings. Mailing of planning update to all interested publics. Community open houses and meetings. Key contact briefings. Mailing of documents with request for comments.
	April 2 - July	Formulate alternatives, analyze implementation effects, select the preferred alternative. Test ability of alternatives to address issues. Obtain public recommendations.	
	Sept.	Prepare an internal review draft EIS. Obtain comments from Area, Regional and Washington office staffs; State of Alaska; special interest groups; and key community contacts.	
	June - Nov.	File draft EIS with Environmental Protection Agency and release to the public.	
D. Decision	Dec. 1979	Obtain public review and computer analysis of draft EIS.	Distribution of Final EIS to the public.
	March 1980	Prepare an internal review Final EIS for comments by Area, Regional, and Washington offices; State of Alaska; special interest groups; and key community contacts.	
		File Final Environmental Impact Statement with the Environmental Protection Agency and release to the public.	



Inform and Involve Activities

During the past year the planning team has completed three phases of the planning process: (1) initial planning, such as identification of major issues and management opportunities; (2) collection and analysis of resource data; and (3) development of alternatives to be presented in the draft environmental statement. Activities to inform and involve groups outside the Forest Service have accompanied each of these planning phases, as follows:

Community Contacts

Initial Planning--Public involvement associated with initial planning activities was to identify interested publics, issues and major concerns, and areas where user conflicts might occur. Because of ongoing public involvement activities for the Tongass Land Management Plan and RARE II, early phases of the 1981-86 effort were coordinated with these processes, including an analysis of public comments on all major planning projects conducted by the agency during the past years.

To validate and expand on this early public involvement record, two meetings were held in Tenakee Springs, on March 27 and April 17, 1978. The community identified a small group, representative of the City Council, Planning and Zoning Commission, and others, to work with the 1981-86 team. This early contact with Tenakee Springs reflects IDT awareness of this community's extensive involvement in the 1976-81 planning process and its on-going concern with all Forest Management activities in Tenakee Inlet.

Data Collection--Public involvement associated with this planning phase was to obtain local assistance in identifying resource values and to review known values in study areas. For these purposes, public meetings were held in Tenakee Springs, July 13; Hoonah, July 25; Mt. Bether community, July 25 and August 19; Port Alexander, July 14. A number of individual contacts with residents of communities throughout southeast Alaska were made at the same time by resource specialists: these contacts are documented in the project planning files.

Toward the conclusion of the field season, effort was made to include residents of Tenakee Springs and Angoon in field studies. No representative of Tenakee Springs was able to accompany the team on a field trip; however, two individuals from Angoon accompanied the IDT and the Forest Supervisor during inventory study of Kelp Bay in October.

Analysis of Data and Formulation of Alternatives--Public contacts associated with this planning phase were for purposes of expanding resource data, obtaining comment on proposed harvest areas, and reviewing issues of major concern to regional communities prior to formulating alternatives. For these purposes, the team met with residents and elected officials in a number of communities, including: Tenakee Springs, December 4, March 19, and June 19; Hoonah, December 4, January 24, and February 7 1/2; Mt. Bether, January 24 and February 7. In addition, open houses to discuss the project were conducted in Sitka and Petersburg on November 14 and in Juneau and Wrangell, November 15, 1978.

In addition to meetings with community residents and leaders, the team has used mailings of written material and media news releases to inform the public of the planning process and opportunities for involvement. News releases, featuring 1981-86 planning, were published in the Sitka Sentinel and Southeast Alaska Empire in October and November. Prior to open houses, paid ads in these newspapers, the Ketchikan Daily News, and Sitka cable television also appeared.

In October, an informational document, providing a map of study areas, the planning schedule, and a review of the decision criteria and nature of the decision was mailed to approximately 400 individuals and groups within southeast Alaska and outside the region. This document provided specific suggestions for interested publics to become involved in the planning process. Prior to the November open houses, another information document was mailed to area residents, followed by a post-card reminder of the meeting dates and locations.

In June, a second information letter was mailed to all individuals on the mailing list. Included was a summary of the project and key issues, a planning schedule, and a summary of the alternatives being prepared for the draft ES.

A copy of the working draft of the DES was provided to the Mayor of Tenakee Springs following a meeting

1/ Negotiations with the Huna Totem Corporation for cooperative development of roads, log transfer facilities, and administrative facilities began April 23, 1979. Numerous meetings between Corporation and Community officials and Forest Service personnel have followed. A record of these negotiations is on file in the Chatham Forest Supervisor's office.



in the community on June 19. Written comment was requested but has not been received.

Consultation With Other Agencies

Employees of the Alaska Department of Fish and Game, the National Marine Fisheries, and the U.S. Fish and Wildlife Service have participated as members of the interdisciplinary teams on both the Chatham and Stikine Areas (see "Appendix"). In addition, Forest Service resource specialists have maintained close contacts with their counterparts in other State and Federal agencies, documenting this consultation in planning records on file.

The State of Alaska Division of Policy Development and Planning (State Clearinghouse) has facilitated further involvement of State agencies in this planning process. Beginning in February, 1978, IDT members met with the State-Federal Coordinator to establish early coordination. Subsequent communications, coordinated through the Clearinghouse, helped to shape early drafts of the environmental statement.

On June 1, copies of the working draft were provided to the State and circulated to the Departments of Commerce and Economic Development; Community and Regional Affairs; Environmental Conservation; Natural Resources; Fish and Game; Transportation and Public Facilities; Division of Policy Development and Planning; and the Office of Coastal Management. Resulting comments, questions, and suggestions were reviewed in a meeting on July 9, attended by representatives of the State, the Forest Service, the Southeast Alaska Conservation Council, and Alaska Lumber and Pulp Company. Future State participation in the planning process will be similarly coordinated.

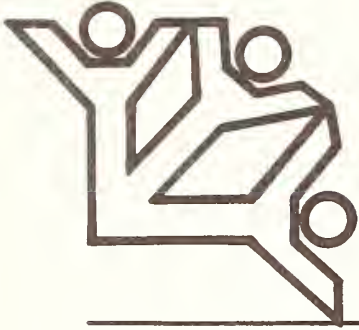
It should be noted that consistency with State Coastal Management Program Standards and Guidelines will be addressed in the final environmental statement. Coordination with communities preparing District Coastal Zone Management Plans will continue through the public involvement process. Should any District CZM plans be completed before the FES is prepared, they will be reviewed and consistency of the 1981-86 operating plan addressed in the final ES.

Notice of intent to prepare an environmental impact statement was published in the Federal Register and newspapers in Juneau, Sitka, Petersburg, and Wrangell in March.

Consultation With Special Interest Groups and Organizations

Special interest groups and organizations, including village and regional Native Corporations, have been provided with planning information and invited to participate. Groups contacted include those with fishing, mining, tourism, timber, sport, and environmental interests. Meetings with representatives of a number of these organizations are documented in the planning files. Representatives of the Southeast Alaska Conservation Council in Juneau, Sitka, and Petersburg participated in the review of the "working draft" in June and July.

Planning information has been provided to Native organizations throughout the State. Continuing consultation and joint planning has occurred with Sealaska and the Huna Totem village corporation, both of whom have identified selection lands adjacent to proposed harvest areas on northeast Chichagof. Representatives of Goldbelt (Juneau) and Kootznوو (Angoon) have also exchanged information and commented on the plan during early phases of the project. In March, all regional and village corporations with land interests in southeast Alaska were provided with a Notice of Intent to Prepare an EIS on the Proposals. Native organizations have also received all written information prepared on the planning process, including the November and June planning updates.



Planning Response to Public Comments

The interdisciplinary team recognizes that proposals in the draft environmental statement do not meet all of the concerns and wishes of those who have participated in early phases of the planning process. "Pleasing all of the people all of the time" in land planning, as most other endeavors, is an impossibility. However, the public involvement process has been successful in identifying a great many of the regional publics interested in this plan and has provided the team with considerable information. The result is a draft environmental statement which attempts to address many of these expressed concerns and which is expected to satisfy a number of the management recommendations presented to the interdisciplinary team by the public.

The full record of meetings, correspondence, and other expressions of interest in the project is available in planning files for review. Below are some of the highlights which illustrate responses of the planning process to public comment prior to release of the draft document.

Community Concerns

The team has received diverse response from various regional communities, reflecting differing lifestyles and specific community problems. The residents of Hoonah, for example, upon reviewing proposals for development in the Whitestone Harbor Management Area, requested that a plan be developed which would include their community on a road system and provide employment potential. The team responded by conducting a number of meetings in the community, with the Huna Totem Corporation, and with residents of nearby Mt. Bethel. The result is reflected in Chatham alternatives and the recommended action. It should be noted that many details of the proposal for management of the Whitestone and Freshwater Management Areas, eg. extension of operations over multiple periods rather than one 5-year period, also reflect community and village Native Corporation wishes.

Other communities, such as Tenakee Springs and Port Alexander, have indicated that very limited logging activities in their areas will best meet their wishes. Because allocation has limited the land base available for timber harvest, it has proven impossible to avoid entirely the areas most important to these communities. However, the study team is responsive to Port Alexander's wish to protect south Baranof and Tebenkof Bay, both allocated for roadless Management. Similarly, the team has limited timber operations in Tenakee Inlet to maintain only the current level of harvest. No new camps are planned

in the area. Road connections, opposed by Tenakee Springs, will not be constructed, despite the management advantages of linking the Inlet with the Freshwater Bay Management Area. The Kadashan drainage, of particular importance to many Tenakee Springs residents, is proposed for harvest by carries very stringent management requirements in order to protect visual and fisheries values.

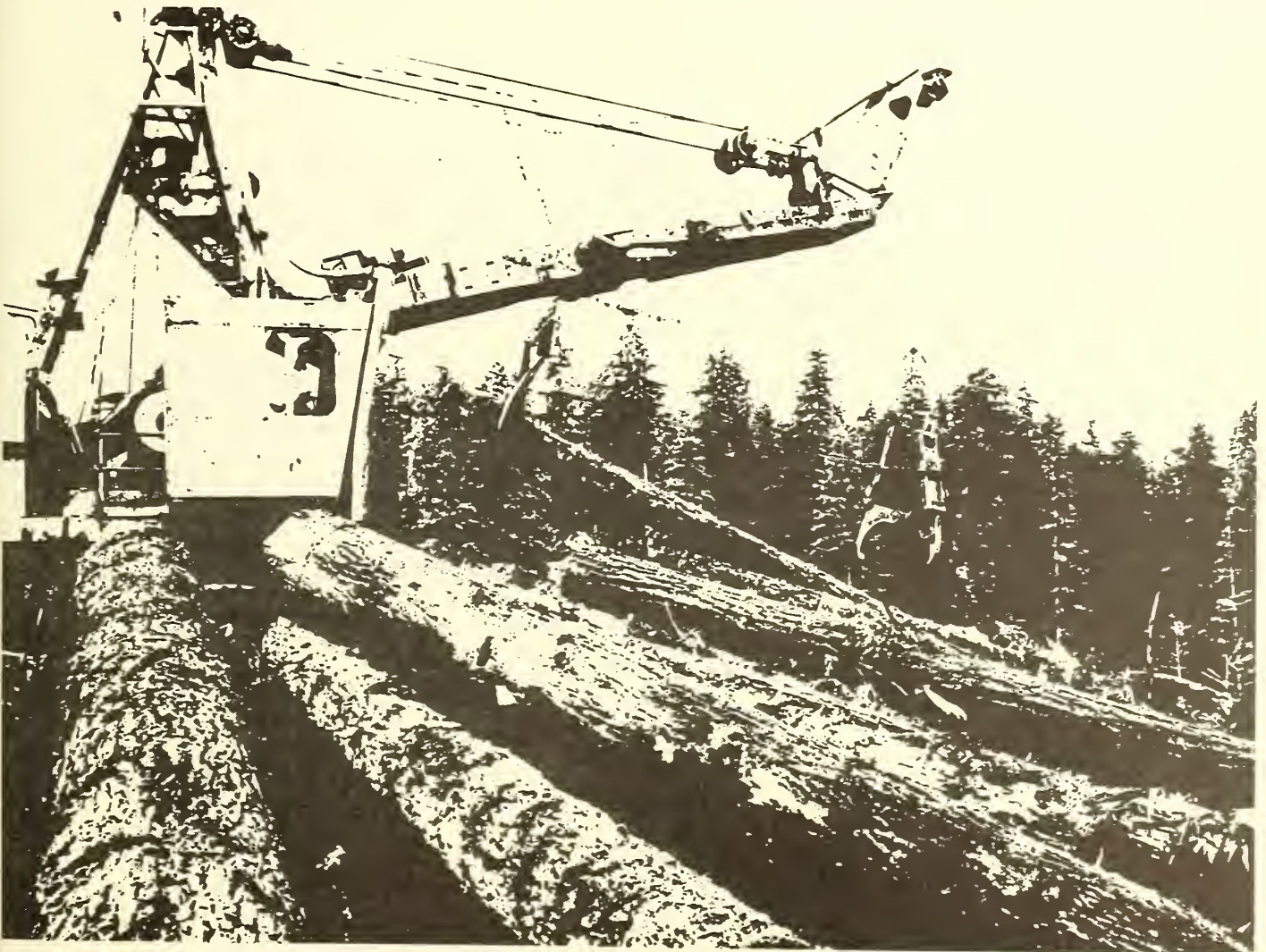
Economic Concerns

The 1981-86 ALP operating plan is the first major development-oriented project to be undertaken since completion of the Tongass Land Management Plan. The team responsible for this plan has, therefore, assumed the role of testing its data and its conclusions. This Forest plan specifies both environmental protection of resources and a level of timber harvest necessary to sustain current employment in the region. The 1981-86 harvest proposals presented in this document reflect these dual directions (which resulted from extensive public involvement in the TLMP process) by recognizing that management of LUD III and LUD IV areas is the key factor in meeting the economic needs of the region.

Environmental Concerns

The interdisciplinary team has completed an extensive process of identifying multiple resource values and protective requirements in the areas being considered for timber harvest. This process incorporated TLMP data, field inventory, and public input. During the course of resource investigation, the team recognized that, while allocation has been completed with TLMP, many areas of sensitivity remain available for timber harvest or other developmental activities. Special interest groups, as well as other agencies, have provided much useful information in identifying these sensitive areas. Again, because of reduced land base in which to meet economic goals, it has not proven possible to avoid timber harvest in all of these areas. Moreover, as the alternative impact assessments (Section III) show, it has not proven possible to avoid all adverse impacts to the resource values within proposed timber harvest areas. However, awareness of these sensitivities has strengthened the interdisciplinary effort to avoid the most severe and irreversible of these impacts through recommendation of skyline logging systems and buffer zones, and development of road systems and unit layouts which maximize resource protection.

**V.
Appendix**





Planning Process Documentation

Much of the data in this section was originally displayed in part two of the "Tongass Land Management Plan" published in March 1979 by the USDA Forest Service in Alaska. In this section, "MIH" refers to Management Information Handbook. "VCU" refers to value comparison unit, which generally corresponds to an area of the Tongass that has a common drainage system. "LUD" refers to one of four land use designations defined in the plan. Entries that carry one asterisk denote value comparison units with a potential for timber harvest and related development during the 1981-86 operating period. Plan periods carry two asterisks; period 1 is for 1981-86, and period 2 is for 1986-91. "PAOT" means persons at one time.

TLMP Direction for Management

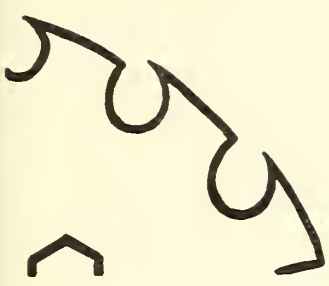
Management Area Number	C29						
Management Area Name	TENAKEE INLET						
VCUs	202.0*	222.0*	223.0*	224.0	225.0	226.0	227.0
LUDs	3,4						

	NFS ACRES	CFL ACRES
Operable CFL	-----	16,804
High visual sensitivity	11,939	11,836
Medium visual sensitivity	8,018	7,914
Beach fringe through 500 feet	14,424	8,732
Special/unique areas	0	0
Bald Eagle nesting areas	4,526	3,280
Total Acres	105,267	28,545

Management Direction/Emphasis

This area will be part of the ALP 81-86 operating area and likely for the 86-91 operating period. TSI activities are planned in VCU 222. A possible connection to a loop trail system would include the canoe portage across the peninsula between VCU 202 and 224. Soil restoration work will be done as needed for the timber sale activities. Major activity emphasis will be directed toward timber harvest, construction of related access roads, and soil restoration following those activities. There are Native selection lands in VCU 202.

MIH Code	Activity	Management Activities				Remarks
		Units of VCU Measure	--Plan Period--	1	2 Future	
E05	TSI	Acres	222.0		Y	
L21	Trail construction	Miles	202.0		Y	Canoe Portage Trail
L21	Trail construction	Miles	224.0		Y	Canoe Portage Trail
TSP	Timber sale project (E06,K05,L04)	---	202.0	Y	Y	ALP 81-86 & 86-91
TSP	Timber sale project (E06,K05,L04)	---	222.0	Y	Y	ALP 81-86 & 86-91
TSP	Timber sale project (E06,K05,L04)	---	223.0	Y	Y	ALP 81-86 & 86-91
TSP	Timber sale project (E06,K05,L04)	---	224.0	Y	Y	ALP 81-86 & 86-91
TSP	Timber sale project (E06,K05,L04)	---	225.0	Y	Y	ALP 81-86 & 86-91
TSP	Timber sale project (E06,K05,L04)	---	226.0	Y	Y	ALP 81-86 & 86-91
TSP	Timber sale project (E06,K05,L04)	---	227.0	Y	Y	ALP 81-86 & 86-91



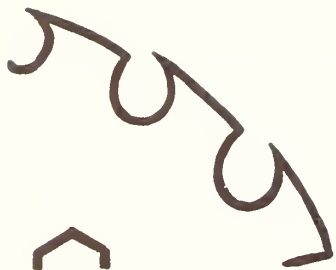
Management Area Number	C34						
Management Area Name	CRAB BAY						
VCUs	230.0	231.0	232.0	233.0	234.0	246.0*	247.0*
LUDs	4						

	NFS ACRES	FCL ACRES
Operable CFL	-----	20,637
High visual sensitivity	8,206	8,206
Medium visual sensitivity	8,571	8,465
Beach fringe through 500 feet	11,249	7,440
Special/unique areas	400	400
Bald Eagle nesting areas	3,345	2,532
	<hr/>	<hr/>
Total Acres	89,213	33,736

Management Direction/Emphasis

This area will be one of the major areas for the existing ALP 76-81 operating period and the ALP 81-86 and 86-91 periods. The logging camps at Crab Bay and Corner Bay will be utilized as much as possible. Major activity emphasis will be timber harvest within the long term ALP T.S. contract.

MIH Code	Activity	Management Activities				Remarks
		Units of Measure	VCU	--Plan	Period-- 1 2 Future	
TSP	Timber sale project (E06,K05,L04)	---	230.0	Y	Y	ALP 81-86 & 86-91
TSP	Timber sale project (E06,K05,L04)	---	231.0	Y	Y	ALP 81-86 & 86-91
TSP	Timber sale project (E06,K05,L04)	---	232.0	Y	Y	ALP 81-86 & 86-91
TSP	Timber sale project (E06,K05,L04)	---	233.0	Y	Y	ALP 81-86 & 86-91
TSP	Timber sale project (E06,K05,L04)	---	234.0	Y	Y	ALP 81-86 & 86-91
TSP	Timber sale project (E06,K05,L04)	---	246.0	Y	Y	ALP 81-86 & 86-91
TSP	Timber sale project (E06,K05,L04)	---	247.0	Y	Y	ALP 81-86 & 86-91



Management Area Number C31
 Management Area Name WHITESTONE

VCUs	205.0*	207.0	208.0*	209.0*	210.0*	211.0	212.0*
LUDs	4						

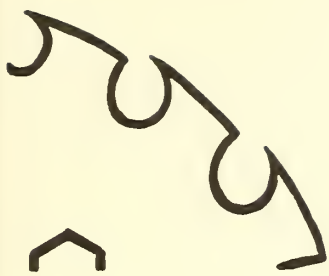
	NFS ACRES	CFL ACRES
Operable CFL	-----	21,903
High visual sensitivity	4,041	4,041
Medium visual sensitivity	6,699	6,391
Beach fringe through 500 feet	8,474	4,245
Special/unique areas	734	215
Bald Eagle nesting areas	1,373	738
Total Acres	73,251	35,724

Management Direction/Emphasis

This is one of the major areas of the ALP 81-86 operating period. A cooperative road to Hoonah and future timber sales with Huna Totem Native Corp. are possible. (This will be developed as a Forest Service road, not a cooperative road with a Huna Totem Corporation.) Opportunities for a loop alpine trail system and shelters utilizing the ALP 81-86 roads as entry points is possible. Fishery habitat improvement in VCU 209 and 205 can be coordinated with road and timber sale development. There is a pending State selection in VCU 205, there are Native selection lands in VCUs 205 and 207.

Management Activities

MIH Code	Activity	Units of VCU Measure	VCU	--Plan 1	Period** 2	Future	Remarks
A05	Recreation or VIS construction	PAOT	209.0		Yes	Y	Alpine Shelters
A05	Recreation or VIS construction	PAOT	210.0		Y	Y	Alpine Shelters
C05	Habitat improvement-fish	Acre Eqv	205.0	Y	Y		Cartina Cr Fishway
C05	Habitat improvement-fish	Acre Eqv	209.0	Y	Y		Suntaheen Cr Fishway
G01	Mining law compliance and admin.	Claims	212.0		Y		Gypsum Mine
L21	Trail construction	Miles	209.0		Y	Y	Alpine Trail
L21	Trail construction	Miles	210.0		Y		Alpine Trail
L21	Trail construction	Miles	212.0		Y	Y	Alpine Trail
TSP	Timber sale project (E06,K05,L04)	---	205.0	Y	Y	Y	ALP 81-86 Coop T.S. with Huna Totem Native Corp
TSP	Timber sale project (E06,K05,L04)	---	207.0	Y	Y	Y	ALP 81-86 Coop T.S. with Huna Totem Native Corp (HTNC)
TSP	Timber sale project (E06,K05,L04)	---	208.0	Y	Y	Y	ALP 81-86 Coop T.S. with HTNC
TSP	Timber sale project (E06,K05,L04)	---	209.0	Y	Y	Y	ALP 81-86 Coop T.S. with HTNC
TSP	Timber sale project (E06,K05,L04)	---	210.0	Y	Y	Y	ALP 81-86 Coop T.S. with HTNC
TSP	Timber sale project (E06,K05,L04)	---	212.0	Y	Y	Y	ALP 81-86 Coop T.S. with HTNC



Management Area Number	C30
Management Area Name	FRESHWATER
VCUs	203.0* 204.0* 213.0 214.0 215.0* 216.0* 217.0* 218.0*
LUDs	3,4

	NFS ACRES	CFL ACRES
Operable CFL	-----	38,484
High visual sensitivity	6,978	6,978
Medium visual sensitivity	10,767	10,656
Beach fringe through 500 feet	13,972	9,754
Special/unique areas	0	0
Bald Eagle nesting areas	4,413	3,246
Total Acres	119,201	54,839

Management Direction/Emphasis

Future opportunity exists for alpine trails and recreation use cabins in VCUs 215 and 218. This area will be one of the major areas for the ongoing ALP 76-81 and 81-86 operating periods. Sealaska may select land in the area and a cooperative road to Hoonah and timber sale may be possible. A Forest Service road is planned. Waterfowl habitat improvement and increased use of the Pavlof Lake area will be accomplished through placement of a cabin and access trail from the road system. Other wildlife and fish habitat improvement is planned VCU 215 and 203. There is a pending State selection in VCU 204. There are Native selection lands in VCUs 203 and 204.

MIH Code	Activity	Management Activities				Remarks
		Units of Measure	VCU	--Plan 1	Period-- 2 Future	
A05	Recreation or VIS construction	PAOT	218.0		Y	Pavlof Cabin
C04	Habitat improvement-wildlife	Acre Eqv	215.0		Y	Upper Freshwater
C04	Habitat improvement-wildlife	Acre Eqv	218.0		Y	Creek nest platforms
C05	Habitat improvement-fish	Acre Eqv	203.0	Y		Pavlof nest platforms
E05	TSI	Acres	217.0	Y		Stream 114-32-06
L21	Trail construction	Miles	204.0		Y	Alpine Trail
L21	Trail construction	Miles	215.0		Y	Alpine trail
L21	Trail construction	Miles	218.0		Y	Pavlof Lake Trail
TSP	Timber sale project (E06,K05,L04)	---	203.0	Y	Y	ALP 81-86
TSP	Timber sale project (E06,K05,L04)	---	204.0	Y	Y	ALP 81-86
TSP	Timber sale project (E06,K05,L04)	---	213.0	Y	Y	ALP 81-86
TSP	Timber sale project (E06,K05,L04)	---	214.0	Y	Y	ALP 81-86
TSP	Timber sale project (E06,K05,L04)	---	215.0	Y	Y	ALP 81-86
TSP	Timber sale project (E06,K05,L04)	---	216.0	Y	Y	ALP 81-86
TSP	Timber sale project (E06,K05,L04)	---	217.0	Y	Y	ALP 81-86
TSP	Timber sale project (E06,K05,L04)	---	218.0	Y	Y	ALP 81-86



Management Area Number C36
Management Area Name KADASHAN*

VCUs 235.0*
LUDs 3

	NFS ACRES	CFL ACRES
Operable CFL	----	12,084
High visual sensitivity	1,740	1,740
Medium visual sensitivity	1,160	1,160
Beach fringe through 500 feet	2,997	1,547
Special/unique areas	0	0
Bald Eagle nesting areas	97	97
Total Acres	33,641	17,787

Management Direction/Emphasis

Major activity emphasis in the future will be timber harvest and road access construction. A road may be built through the upper drainage during the ALP 76-81 and 81-86 operating periods to access timber in other management areas and to utilize the logging camp at Corner Bay. Connecting the Sitkoh Bay-False Island road systems with the Corner Bay system would facilitate future resource management needs. Timber may be harvested from the area in the ALP 81-86 period in connection with the road development and in the ALP 86-91 period. Recognizing concerns expressed by various communities, Alaska Department of Fish and Game, and others, timber harvest and related road location and construction will be carried out in accordance with the following general guidelines and procedure: 1. No roads or timber harvest will be allowed within 1/8 mile of the estuarine tide flat of Kadashan Bay. 2. No roads or bridges will be allowed along or across the Kadashan River in the lower one mile upstream from the general line where the grass flats meet the timber. 3. No timber harvest or roading will be allowed within 1/8 mile of either riverbank along this lower one mile reach of the Kadashan River. These guidelines will be provided to an interdisciplinary team who will conduct a field inventory and analysis before a final recommendation is implemented. Upstream from these zones resource protection measures as described in the Chatham Area project guidelines for wildlife, sec. 1110, alluvial area, sec. 1120, stream and shorelines encroachment, sec. 1130, and stream crossings, sec. 1140, and those resource protection measures applicable as written in the southeast Alaska area guide, will be strictly adhered to. The three cabins which are the Forestry Sciences Lab., the Chatham administrative, and the ADF&G will be permitted to remain with maintenance as required. An additional cabin may be constructed in the upper Hook Creek drainage to accommodate a four person field crew involved in NPS pollution monitoring.

MIH Code	Activity	Management Activities	Units of VCU Measure	--Plan Period--			Remarks
				1	2	Future	
A05	Recreation or VIS construction	PAOT	235.0	Y			Hook Creek Cabin construction
C04	Road construction	Miles	235.0	Y	Y		
TSP	Timber sale project (E06,K05,L04)	---	235.0	Y	Y	Y	ALP 86-91

Management Area Number C37
 Management Area Name CORNER BAY

VCUs 236.0* 237.0* 238.0* 239.0 240.0 241.0 242.0 243.0 244.0 245.0
 LUDs 3,4

	NFS ACRES	CFL ACRES
Operable CFL	-----	55,942
High visual sensitivity	19,315	18,919
Medium visual sensitivity	34,114	34,010
Beach fringe through 500 feet	15,597	13,479
Special/unique areas	104	104
Bald Eagle nesting areas	7,168	6,252
Total Acres	135,542	78,504

Management Direction/Emphasis

This area will be used during the ALP 1981-86 period and for salvage operations. The logging camp at Corner Bay will be utilized. Deer and eagle habitat work will be done in VCUs 243 and 245. TSI is planned in VCU 236; a trail to Kook Lake from the Corner Bay road system and from Chatham Strait is possible.

MIH Code	Activity	Units of Measure	Management Activities			Remarks
			VCU	--Plan	Period--	
			1	2	Future	
C04	Habitat improvement-wildlife	Acre Eqv	243.0		Y	Deer Habitat improvement, timber thinning
C04	Habitat improvement-wildlife	Acre Eqv	245.0		Y	Deer habitat improvement, eagle tree dev. timber thinning
E05	TSI	Acres	236.0	Y	Y	Past timber sale
K05	Soil resource improvement	Acres	236.0	Y	Y	
L21	Trail construction	Miles	236.0		Y	Kook Lake trail
L21	Trail construction	Miles	239.0		Y	Kook Lake trail
TSP	Timber sale project (E06,K05,L04)	---	236.0	Y	Y	ALP 81-86 salvage
TSP	Timber sale project (E06,K05,L04)	---	237.0	Y	Y	ALP 81-86
TSP	Timber sale project (E06,K05,L04)	---	238.0	Y	Y	ALP 81-86



Management Area Number C43
Management Area Name KELP BAY

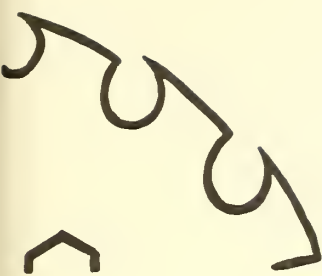
VCUs 296.0* 297.0* 298.0 314.0* 315.0
LUDs 3,4

	NFS ACRES	CFL ACRES
Operable CFL	-----	27,812
High visual sensitivity	30,081	30,081
Medium visual sensitivity	2,067	2,067
Beach fringe through 500 feet	18,887	15,399
Special/unique areas	119	119
Bald Eagle nesting areas	6,973	5,630
Total Acres	103,522	36,624

Management Direction/Emphasis

This is one of the major areas in the ALP 76-81 and 81-86 operating periods. Major activity emphasis will be timber harvest and related access road construction as part of the ALP long term timber sale contract. A paired watershed study will be implemented in this area to better assess NPS pollution from timber management activities. This study will supplement the Kadashan barometer watershed program and continue for approximately fifteen years. The facilities will be constructed in either or both VCUs 296 and 297.

MIH Code	Activity	Management Activities Units of VCU Measure	--Plan Period--			Remarks
			1	2	Future	
A05	Recreation or VIS construction	PAOT 296.0				
A05	Recreation or VIS construction	PAOT 297.0				Catherine Island
TSP	Timber sale project (E06,K05,L04)	--- 296.0	Y	Y		ALP 76-81 & 81-86
TSP	Timber sale project (E06,K05,L04)	--- 297.0	Y	Y		ALP 76-81 & 81-86
TSP	Timber sale project (E06,K05,L04)	--- 298.0	Y	Y		ALP 76-81 & 81-86
TSP	Timber sale project (E06,K05,L04)	--- 314.0	Y	Y		ALP 76-81 & 81-86
TSP	Timber sale project (E06,K05,L04)	--- 315.0	Y	Y		ALP 76-81 & 81-86



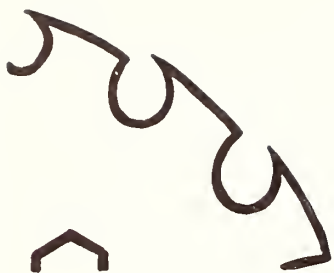
Management Area Number	S09
Management Area Name	EAST KUIU
VCUs 416.0 417.0 418.0 419.0 420.0	
LUDs 4	
	NFS ACRES
Operable CFL	----
High visual sensitivity	24,008
Medium visual sensitivity	33,808
Beach fringe through 500 feet	8,829
Special/unique areas	0
Bald eagle nesting areas	13,027
	<hr/>
Total Acres	94,689
	CFL ACRES
	28,151
	19,838
	19,143
	8,829
	0
	12,877
	<hr/>
	56,143

Management Direction/Emphasis

Management Area is in the ALP contingency area and is one of the principle land bases for timber production proposed for the 1981-86 and 86-91 operating plan periods. With management unit 04 the area will, over the long term, be managed to support a substantial portion of ALP wood requirements. It is anticipated much of the area will be accessible by road from Rowan Bay and that one or more additional log transfer sites will be required for the efficiency of the sale-as-a-whole. Multiple use management of the area resources will be enhanced by this road system. Approximately 50 MMbf of timber will be removed each year throughout the island for the next 10 years. Management emphasis on second growth stands will increase following 1990.

No Name Bay, Seclusion Harbor, Port Camden, and Threemile Arm have higher existing and potential recreation use and Port Camden has higher recreation and wildlife values than other VCUs in the Management Area. Project planning in these areas will provide greater latitude for the protection of disposed recreation and fish and wildlife values. As a high priority enhancement project, Slippery Creek with Camden Lake will be evaluated in 1979 and 1980.

MIH Code	Activity	Management Activities				Remarks
		Units of Measure	VCU	--Plan 1	Period-- 2 Future	
A05	Recreation or Vis Construction	PAOT	ALL		Y	AS DETERMINED BY DEMAND
C05	Habitat Improvement-Wildlife	ACRE EQV	ALL		Y Y	DEER RANGE MITIGATION
C05	Habitat Improvement-Fish	ACRE EQV	416.0		Y	STR.NO.105-31-19
C05	Habitat Improvement-Fish	ACRE EQV	417.0		Y	STR.NO.105-31-18
						AS EVAL
C05	Habitat Improvement-Fish	ACRE EQV	418.0		Y	STR.NO.105-32-80
						AS EVAL
						STR.NO.105-32-85
						AS EVAL
C05	Habitat Improvement-Fish	ACRE EQUV	420.0	Y		STR.NO.109-43-03
						AS EVAL
E05	TSI	ACRES	ALL		Y	
F05	Water Resource Improvement	ACRES	ALL	Y	Y Y	
G01	Mining Las Compliance and Admin.	CLAIMS	ALL	Y	Y Y	
L21	Trail Construction	MILES	ALL		Y Y	
TSP	Timber Sale Project (E06,K05,L04)	---	ALL	Y	Y Y	AS OPPORTUNITIES AND DEMAND WARRANT ALP L.T. TIMBER SALE.



Interdisciplinary Team Membership

Two interdisciplinary teams, based on the Chatham and Stikine Areas, have conducted the environmental study for the 1981-1986 ALP operating plan. Close coordination between team leaders and specialists on each team, along with regular meetings of the two full interdisciplinary teams, has assured planning consistency.

On each administrative area, the interdisciplinary teams are organized with a small "core team" to coordinate the planning and a larger "support team," composed of multi-discipline specialists. Employees of other agencies and Alaska Lumber and Pulp Company are included as support team members. Team membership is as follows:

CHATHAM AREA

Core Team

Calvin Bird, Forester (Team Leader)
B.S. Forest Management, 7 years experience
Fred Glenn, Soil Scientist,
Ph.D. Soil Physics, 4 years experience
Elaine Mann, Public Information Officer
MA English, 2 years experience
Bill Niles, Civil Engineer
B.S. Forest Engineering, 9 years experience
Ken Thompson, Fishery Biologist
B.S. Fish and Wildlife Management, 3 yrs. exp.

Support Team

Ted Allio, Civil Engineering Technician
12 years experience
Don Breitingner, Forester
B.S. Forestry, 7 years experience
Stan Davis, Archeologist
M.A. Archeology, 3 years experience
Darrel Tracy, Landscape Architect
M.L.A. Landscape Architect, 3 years experience
O. H. Duffle, Forestry Technician
22 years experience
Larry Tripp, Soils Scientist
M.S. Soil Sciences, 1 year experience
Bob Fish, Forester
M.S. Forest Management, 17 years experience
Dennis VanHorn, Wildlife Biologist
M.S. Biology/Zoology, 6 years experience
Don Fisher, Landscape Architect,
BLA Landscape Architecture, 3 years experience
Bob Vaught, Fisheries Biologist
B.S. Fisheries Biology, 3 years experience
Ron Welsh, Forester
B.S. Forestry, 23 years experience

Matt Longenbough, Fisheries Biologist
M.S. Marine Resources, 2 years experience
Don Williamson, Wildlife Biologist
B.S. Wildlife Biology, B.A. Psychology,
1 year experience as Fisheries Biologist,
2 years experience as Wildlife Biologist
John Stednick, Hydrologist
Ph.D. Forest Hydrology, 3 years experience
Ken Walsh, Hydrologist
B.A. Meteorology, 13 years experience

Support Team (Non-Forest Service)

Bill Hughes, Biologist
M.S. Oceanography, 9 years experience
Loyal Johnson, Area Game Biologist
M.S. Wildlife Management, 15 years experience
Leo Evans, Logging Engineer
B.S. Forest Management, 17 years experience
Ed Merrell, Fisheries Biologist
B.S. Wildlife, M.S. Fisheries, 2 yrs. exp.

STIKINE AREA

Core Team

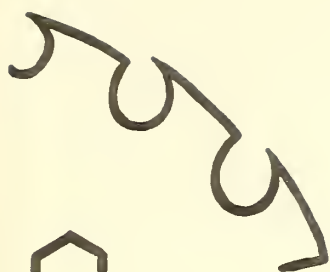
Dave Riemer, Landscape Architect
B.A. Landscape Architecture, 13 yrs. exp.
Bob Gerdes, Forester
B.S. Forestry, 14 years experience
Everett Kissinger, Soils Scientist
B.S. Soil Science, 12 years experience
Dick Irizarry, Fisheries Biologist
B.S. Wildlife Management (Fisheries) 13 yrs. exp.
E.L. (Butch) Young, Wildlife Biologist
B.S. Wildlife Management, 14 years experience

Support Team

Jim Franzel, Fish Biologist
B.S. Fisheries Science, 4 years experience
Jim Wilson, Forester
B.S. Forest Management, 15 years experience
Norm Covington, Public Information Officer
14 years experience
Gene Smith, Civil Engineer
B.S. Civil Engineering, 5 years experience
Jim Schramek, Hydrologist
M.S. Forest Hydrology, 4 years experience
Katherine Arndt, Archeologist
M.A. Anthropology, 3 years experience
Dennis Murphy, Forester
B.S. Forest Management and Statistics, 11 yrs. exp.

Support Team (Non-Forest Service)

John Edgington, Land Use Project Leader,
M.S. Fisheries Science, 8 years experience
Mark Horton, Ecological Services Officer
B.S. Wildlife Science, 6 years experience



Basis of Evaluation: Regulations and Inventory Methods

Soils

Regulations and Guidelines--National and departmental directives call for protection of the soil resource and development of guidelines for mitigating both direct and indirect soil impacts. Timber harvest on National Forest land is to be considered only where:

1. Soil, slope, or other watershed conditions will not be irreversibly damaged.
2. There is assurance that such lands can be adequately restocked within five years after harvest.
3. Protection is provided for streams, streambanks, shorelines, lakes, wetlands, and other bodies of water from deposits of sediment likely to seriously and adversely affect water condition or fish habitat.

Inventory Methods--A detailed (third order) soil inventory was conducted over most of the study area. Only Gartina Creek (Freshwater Bay Management Area) and Trap Bay (Corner Bay Management Area) remain to be inventoried. These soil inventories will be done in early 1979.

Soil delineations are based on physical soil characteristics, vegetative cover, and geomorphic features. Interpretations with regard to timber management, productivity potential, wildlife habitat suitability, road construction capabilities, and slope stability have been developed for each soil type.

V-notch dissected and steep slopes within preliminary cutting unit boundaries have received additional field evaluation. Studies of slope stability and susceptibility of these slopes to harvest damage have been conducted over much of the area.

Water Resources

Regulations and Guidelines--In 1972, Congress passed amendments to the Federal Water Pollution Control Act (PL 92-500). This law authorizes the State to establish water quality standards and pollutant discharge limitations applicable to all waters of the State. These standards were established in October, 1973. Authority was also given to prevent, control, and abate nonpoint source pollution through enforcement of these standards.

Non-point source pollution was to be abated by Best Management Practices (BMPs) developed by land manage-

ment agencies. BMPs are being developed by the Department of Environmental Conservation, the Department of Natural Resources, and the USDA Forest Service. The Forest Service is developing BMPs from quantitative data obtained by monitoring current forest land management activities. BMPs are presently documented by the Forest Service in the Southeast Alaska Area Guide and the Chatham Area Project Guidelines.

Proposed water quality standards by the Department of Environmental Conservation do not reflect natural variability or water sampling difficulties. Employment of BMPs has resulted in water quality violations by present standards, a situation that has not been legally analyzed. Water from undisturbed watersheds has also exhibited occasional violations of these water quality standards.

Inventory Methods--In compliance with the National Forest Management Act, third level inventories were completed prior to planning. Inventory results are available from the Chatham Area Watershed Program. Inventories for Trap Bay, Kadashan, and Gartina Creek (Freshwater Bay Management Area) will be completed.

Air Quality

Guidelines and Regulations--Environmental Protection Agency standards include primary standards for public health and secondary standards for the general welfare. The State of Alaska has adopted the secondary, or Ambient Air Standards, which are the more rigorous air quality requirements. These standards require monitoring of particulate matter and sulphur dioxide pollutants in the ambient air.

Data Collection--A monitoring station has been operated at Thimbleberry Bay, located approximately two miles from the Alaska Lumber and Pulp Mill in Sitka. Data collected is available through the State of Alaska Department of Environmental Conservation over the past five years.

Silviculture

Guidelines and Regulations--Silvicultural systems are regulated according to national resource management guidelines. These laws and agency regulations require that timber operations on National Forest land be conducted so as to give all resources necessary consideration and protection.

Inventory Methods--Overall timber volume and composition of the timber resource on the Tongass National



Forest has been inventoried in recent years. The TLMP process established timber volume and operability. The Forest has also been species and volume typed into strata on aerial photos, with results mapped. Stand examinations give additionally detailed information on available volume in specific areas and provide some stand environmental data. The most specific knowledge of volume will be obtained when the proposed harvest area is cruised in late 1979.

However, timber management requires more information than volume data. Species characteristics and environmental effects on growth must also be considered. This information is provided on a continuing basis, through studies by both private and government researchers such as the Forest Services Laboratory which is a research branch of the USDA Forest Service.

Wildlife

Guidelines and Regulations--Management of the fish and wildlife resource on the Tongass National Forest is conducted cooperatively with the State of Alaska and other Federal agencies under direction of National legislation, Departmental policy, and state regulations. These guidelines and regulations provide the following objectives to the Management program:

- * Develop and maintain, in cooperation with the States and in harmony with the natural environment and with other uses of the land, a pattern of wildlife and habitats on the National Forest System Lands that will best meet the needs of wildlife, fish, and people now and in the future.

- * Give special attention to the environmental needs of threatened and endangered wildlife and fish species, and to those species which are dependent upon National Forest System Lands for the greater part of their range.

To accomplish these objectives, agreements in the form of Memorandums of Understanding have been reached with the State and other Federal agencies. Included is an agreement with the Fish and Wildlife Service (USDI) to maintain eagle populations at current levels and to protect known eagle nesting sites from destruction and undue disturbance.

The Endangered Species Act of 1973 (P.L. 93-205) is the basis for Departmental and agency policy which provides full protection for all fish, wildlife, and plant species classified as threatened or endangered for this area.

Inventory and Data Collection--Four methods were used to gather information on wildlife habitat. These were:

- * Use of TLMP data, including wildlife rating forms and computer compilations of information. This source provided VCU information concerning wildlife value, current human use patterns, special or unique areas, and percent and acreage of wildlife habitat within each land unit.

- * Examination of Alaska Department of Fish and Game hunter harvest data. This source does not provide VCU data, but applies to larger subunits within a Management Area, eg. Freshwater Bay.

- * Examination of aerial photographs. This method was used to identify potential critical wildlife habitat.

- * Examination on the ground of areas proposed for cutting units, road location, camps, or log transfer sites. Field investigation was limited to those areas where activities were proposed, with priority given to areas where resource conflicts were suspected.

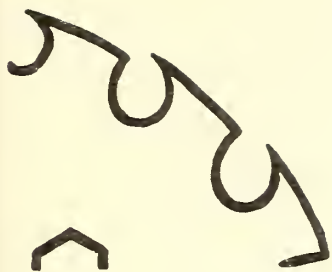
Each of these data collection methods has limitations and may be corrected with further site investigation. In addition, several areas were deleted and other areas added (Kadashan, Trap Bay, Gratina, Lower Game Creek, and Seal Creek) after the conclusion of the 1978 field season. These areas will be field surveyed early in the 1979 season.

Inventories to identify potential habitat enhancement projects have not been conducted.

Fish

Regulations and Guidelines--Management of the fishery resource is directed by Federal legislation and Departmental regulations as described in the introduction to Section III. In addition, agency agreements and legislative direction discussed for management of the wildlife resource are observed in fishery management programs wherever applicable.

Inventory Methods--Forest Service fisheries biologists have been closely involved in the planning process to develop the ALP 1981-1986 operating plan. Stream habitat surveys conducted during 1976-78 and aerial photos were used to help locate and design cutting units. Alternative plans were developed to meet constraints of the decision criteria. Fisheries



resource trade-offs were made in every alternative, due to economic considerations and contractual requirements. Alternative III represents the least risk of adverse impacts on fisheries resources.

The Chatham Area is involved in various programs which enhance fish habitat and mitigate impacts of timber harvest. Lake enrichment to improve sockeye salmon production, construction of fish ladders on streams containing barriers to fish migration, and stream debris removal are such programs. Several enhancement sites are present within the 1981-1986 management areas. More information on these planned projects is available from the Fish and Wildlife Section of the Chatham Area Forest Service.

Visual and Recreation Resources

Guidelines and Regulations--The Forest Service visual and recreational management program is outlined in USDA Agriculture Handbook No. 462, Volume Two, Chapter One - The Visual Management System; and Forest Service Manual 2380. This program establishes the visual landscape and recreational opportunities as basic forest resources.

The following criteria has been set up for management of the visual resource:

Viewer sensitivity levels are determined for land areas viewed by those who are traveling through the forest by air, waterways, roads, and trails; are using facilities such as campgrounds, visitor centers, public cabins, picnic grounds, winter sports areas, and resorts; or are otherwise concentrating use and recreation at lakes, streams, and other water bodies. High sensitivity levels are associated with areas of national importance and high public use, e.g. ferry routes, tour ship routes, high volume recreational waterways, anchorages, camping areas, and permanent communities. Lower sensitivity levels are identified with areas lacking national prominence or receiving limited use by recreationists.

Landscape variety classes reflect natural scenic qualities. Distinctive landscape variety ratings are generally applied to those areas with outstanding or unusual visual quality. Conversely, landscapes with little diversity in landform, vegetative patterns, waterforms, or rock formations are given lower variety class rating.

Visual Quality Objectives (VQOs) are a set of measurable goals for the management of forest visual resources. VQOs are based upon an evaluation of

viewer sensitivity levels and landscape variety classifications, and describe the different degrees of acceptable alternation of the natural landscape. They consist of the following classifications:

Preservation: Management activities, except for low visual-impact recreational facilities, are prohibited.

Retention: Management activities are allowed if not visually evident. Changes to the landscape must mimic natural characteristics.

Partial Retention: Management activities that are visually subordinate to the natural landscape are allowed.

Modification: Management activities may visually dominate the natural landscape but must appear as natural occurrences when viewed as foreground and middleground.

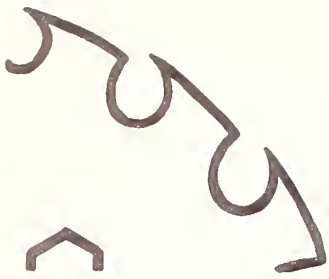
Maximum Modification: Management activities may dominate the natural landscape but must appear as natural occurrences when viewed as background.

Unacceptable Modification: Management activities should not be permitted, regardless of the distance from which the activity might be observed.

Research Methods--Several methods were used to establish recommended Visual Quality Objectives. Landscape variety classifications were inventoried through on-the-ground survey, aerial photograph analysis, and flight reconnaissance. Existing recreational use was determined from analysis of recorded recreation visitor days, and verification of major small boat, ferry, and tour ship routes. Potential use areas were determined through flight reconnaissance and on-the-ground analysis. Areas seen by forest visitors were determined by manual topographic analysis and, in some areas, radar mapping. Data furnished by the Tongass Land Management Plan was reviewed and coordinated with written inventories supplied by residents of Elfin Cove, Hoonah, Tenakee Springs, and by members of the Sitka Conservation Society. The coordinated data was used to evaluate the recreational opportunities available within the study areas.

Cultural Resources

Guidelines and Regulations--The National Environmental Policy Act of 1969, the National Historic Preservation Act of 1966, and Executive Order 11593 require that information on cultural resources within impacted



areas must be compiled. A general method for gathering data has been suggested. The three stages of the method are: 1) background research and the evaluation of existing data as a means of identifying cultural sites. 2) reconnaissance survey as a means of testing the general hypotheses reached in the first stage; and 3) intensive inventory of high potential areas which are potentially impacted by proposed management activities. Procedures for the evaluation and protection of all known cultural resources are set forth in 36 CFR 800.

Inventory Methods--Due to the limitations of both existing information and the means of survey available (flight reconnaissance, on-foot survey, and photo analysis), only the first two steps of the suggested method have been carried out on areas proposed for harvest in 1981-86. Information gathered from these stages has been used to establish criteria for conducting future reconnaissance and intensive survey areas as follows:

High Probability (Areas between sea level and 100 feet in elevation): It is believed that all or most of the people who utilized the area in the past were strongly oriented toward the sea, and that their activities were, therefore, concentrated along the coast. Because of sea level changes since the end of the Pleistocene the 100 foot boundary has been established as a means of covering those inland areas which may contain past coastal inhabitation. All inventory to date has been done in this category.

Moderate Probability (Areas between 100 and 1,000 feet in elevation with slopes of less than 50 percent): Although people who were oriented toward the sea would have lived and worked along the coast, they may have made trips to island interiors to hunt and to gather raw materials. Terrain which slopes less than 50 percent is presumed conducive to sedentary human activity (i.e. temporary camping).

Low Probability (Areas between 100 to 1,000 feet in elevation with slopes of greater than 50 percent, and all areas above 1,000 feet in elevation): It is assumed that such areas are least likely to have supported human activity.

Socioeconomic Impacts

Guidelines and Regulations--USDA Secretary's Memorandum No. 1827, Revised (October 30, 1978) specifically establishes social and economic considerations as a function of land use policy:

This memorandum establishes a departmental policy to promote attainment of land use objectives that are responsive to the needs of the people. This policy is supportive of the constitutional responsibilities of State and local governments for making and implementing public policy regarding land use. This policy is designed to contribute to improved social and economic well-being and to protect the quality of the environment. In formulating and implementing this policy, it is the intent of the Department to (a) assist local and State governments and individual landholders in defining and meeting needs for growth and development; (b) protect the natural environment; and (c) assure adequate supplies of high-quality food, fiber, wood, and water.

Data Collection--Information by which to assess the social and economic effects of proposals for the 1981-86 operating period has been gathered as follows:

- * Evaluation of social and economic data assembled during earlier planning activities, including the 1976-81 ALP Environmental Impact Statement and the Tongass Land Management Plan, with attendant socioeconomic working reports.
- * Review of draft alternatives by the USDA Forest Service Region 10 economist and incorporation of this review into the draft environmental impact statement analysis of social and economic effects.
- * Extensive public involvement in affected communities and with interested and affected special interest groups to assess potential social and economic effects of draft alternatives.



Socioeconomic Assessment of Hoonah

Hoonah

Proposals for logging and related activities on north-east Chichagof represent major impacts for the small community of Hoonah. The Forest Service and community leaders recognize that both positive and negative effects may result within the social, economic, and cultured structure of the village as population increases and new employment patterns emerge.

The Interdisciplinary Team, recognizing the need for thorough planning to address these issues, has consulted extensively with the community. Contacts have included--in addition to elected officials--those individuals responsible for social and community services, law enforcement, educational programs, health programs, and others. Prior to developing alternatives, the team held open houses and discussed some of these potential effects with many residents. To encourage consideration of both negative and positive impacts, an informational response form was distributed (see page 106). Written responses and ensuing discussion indicated that most residents consider the proposals to represent positive opportunities for the community and view negative effects as tolerable "trade-offs."

Nevertheless, the IDT believes that continuing involvement of sociological and economic specialists will be of crucial importance during the remaining planning phases and subsequent implementation of the operating plan. The following expertise has been sought during initial planning and preparation of the DES:

* The State of Alaska Department of Community and Regional Affairs was invited to participate actively with the IDT in assessing potential impacts on Hoonah. Limited departmental staffing made it impossible for this agency to prepare a social assessment of the community or to participate to the degree requested. However a copy of the working draft was reviewed by this department and increased staffing may permit greater involvement during the coming year.

* Data gathered in Hoonah by the University of Alaska/Institute of Social and Economic Research under contract with the Forest Service (April, 1978) has been consulted in developing proposals.

* The Regional Forest Service Economist has attended public meetings, met with community officials, and advised the IDT on potential economic effects of the plan upon the community.

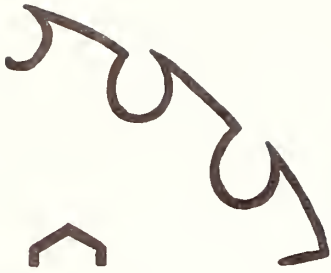
* The Regional Forest Service Sociologist has reviewed the DES and advised the IDT. During the coming year, increased participation by the Regional Sociologist will accompany final planning and implementation.

Following is a preliminary assessment of the community and effects which may result from implementation of the Recommended Action:

Projected employment and total payroll resulting from proposed operations in the Hoonah Area are indicated in table 21. Both Hoonah and Mt. Bether view this employment potential as highly positive effects of the proposal. In addition to opportunities for timber-related employment from operations on National Forest lands, future timber development by the Huna Totem Corporation on lands selected under the Alaska Native Claims Settlement Act is possible. People moving into the area from outside will stimulate some secondary employment, but most of the impact is likely to be from direct employment due to the current industrial structure of Hoonah. Sales of timber from the Native Corporation lands, probably as round log exports, will provide investment capital that can stimulate other employment.

In order for local residents to benefit from nearby timber harvest activities, they must have suitable skills or training opportunities. Interviews in the community indicate that the Tlingit-Haida skills survey, completed in 1975, may not fully reflect the number of skilled workers now in the community of Hoonah. Data is being gathered by Tlingit-Haida Central Labor Council and Huna Totem Corporation.

The Hoonah school system has an enrollment of about 300 students. It is anticipated that an additional 50 students could be absorbed without straining present facilities and faculty. Discussions with the School Superintendent and members of the School Board indicate that increased enrollment would benefit the school by providing job security to teachers and staff and by providing better utilization of existing facilities and equipment. Additional population in the community would also provide needed tax support to the school system. The potential for expanding vocational training to prepare students for employment opportunities available under alternatives is being pursued by the school and is expected to include such programs as diesel mechanical training. Application by the Hoonah School District for State of Alaska Department of Education funding of a power mechanics component to the Career and Vocational Education Program has



been endorsed by the Forest Service. IDT members have met with the Hoonah School Superintendent, School Board Members, and Vocational Education Instructor and will continue to facilitate all efforts to provide local training for potential job opportunities in the Hoonah area.

The current housing situation in Hoonah does not appear capable of absorbing any large population influx. Although 65 low-income single-family dwellings were recently built by the Tlingit-Haida Regional Housing Authority, these are already occupied. At the same time, there are 80 rapidly deteriorating houses which are considered to be unfit for human habitation.

The City of Hoonah supplies water, sewage disposal and electricity, all at a fee. Discussions with local government officials have indicated that both the sewage disposal system and the electric plant can withstand substantially greater use within their capacities. However, the water supply system is a problem. While there is sufficient water available to supply an increased population throughout most of the year, periodic shortages are a concern at the present population level. Any substantial increase in population will quite likely require a larger water supply facility.

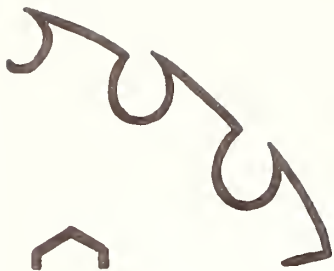
For 1975, the average family income for Hoonah's fishermen was approximately \$6,000. With the high

living expenses typical of Alaska, it is clear that many families must rely on subsistence activities to supplement their cash incomes. This does not suggest that reductions in populations of favored fish and wildlife species will necessarily have a deleterious effect on the community. Unemployed individuals have free time so a situation that merely makes it more time consuming to gather subsistence needs is not a critical factor. However, there are serious implications if fish and wildlife populations fall to a point where the affected people cannot gather sufficient foods to meet their needs. Even with the prospects of increased average family income as new job opportunities occur, careful consideration should be given to the distributional aspects of resource development plans.

With the development of a cultural center and promotional activities, Hoonah may increase its tourist trade. The extent to which tourism might increase is constrained by existing lodging facilities; however, the lodge located in Hoonah is currently underutilized. Tourism in southeast Alaska is further constrained by its seasonal nature and limited transportation systems. The potential impacts of timber proposals in the area upon developing tourism and recreation are favorable to the degree that a developed road system increases recreation access. However, harvesting may diminish visual quality and the overall enjoyment of recreational visitors.

Table 21--Estimated Employment in Hoonah Attributable to 10-Year Harvest Plan

Year	Direct Private Employment			Direct Public Employment			Total Direct Employment		
	Jobs	Man-Years	Total Payroll (thousands of dollars)	Jobs	Man-Years	Total Payroll (thousands of dollars)	Jobs	Man-Years	Total Payroll (thousands of dollars)
1979	5	5	\$116	31	25	\$376	36	30	\$492
1980	30	22	\$511	31	25	\$376	61	47	\$887
1981	65	44	\$1,022	37	23	\$351	92	67	\$1,373
1982	65	44	\$1,022	35	34	\$612	100	78	\$1,634
1983	55	37	\$859	35	34	\$612	90	71	\$1,471
1984	55	37	\$859	35	34	\$612	90	71	\$1,471
1985	55	37	\$859	41	35	\$588	96	72	\$1,447
1986	55	37	\$859	41	35	\$588	96	72	\$1,447
1987	55	37	\$859	39	35	\$613	94	72	\$1,472
1988	55	37	\$859	35	34	\$612	90	71	\$1,471
1989	55	37	\$859	35	34	\$612	90	71	\$1,471
1990	55	37	\$859	35	34	\$612	90	71	\$1,471
1991	20	14	\$325	35	34	\$612	55	48	\$937
1992	20	14	\$325	27	26	\$425	47	40	\$750



HOONAH PUBLIC MEETING
February 1979

YOUR NAME

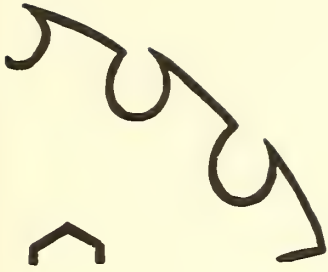
GROUP REPRESENTED (Optional)

Thank you for attending our meeting. Please write down your questions, ideas, and suggestions to improve our planning for activities in the Hoonah area. Only if we know your ideas and concerns can the Planning Team develop a plan which is good for the community.

Listed below are some of the events which could occur through the proposals for development. Please tell us:

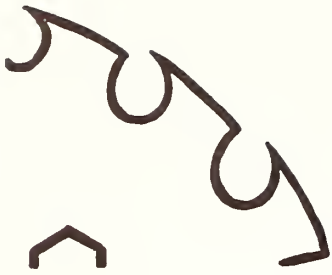
- Which of these changes do you welcome.
 - Which of these changes are unacceptable to you.
 - The suggestions you have to make the plan more acceptable to you.
-

1. There would be increased jobs for Hoonah residents. Some employment will be available in construction of roads and facilities; in logging, in machine maintenance and operation. Indirect employment opportunities through community support services would also be created--Hoonah might need more shopkeepers, more taxis, more teachers, etc.
2. New residents will require housing--existing houses or new construction. A trailer park is one possibility.
3. New families will need community services such as utilities, telephones, sewers, water.
4. With more people living here or visiting Hoonah, there may be increased need for law enforcement personnel and facilities and for fire protection.
5. The Hoonah schools would have an increased enrollment.



Page Two

6. New residents and jobs would increase Hoonah's tax base.
7. New residents will become community voters.
8. Until stores increase their stock (or new stores begin operating) there could be shortages of specific items.
9. Another possibility is that new residents may provide some of their own services, such as a logging camp commissary, power generators, or fuel supplies, rather than using local services exclusively.
10. The road system would invite increased traffic. There would also be greater potential for off-road vehicles such as snow machines and motorcycles.
11. New residents would increase need for expanded health services.
12. There could be increased need for boat moorage by residents and visitors.
13. New residents (loggers, construction crews, Forest Service personnel) would bring different lifestyles and values into the community.
14. Roads will provide greater access to hunting and fishing areas. More people will use the Hoonah area for recreation.



Page Three

15. Logging and related development can harm fisheries, although management is planned to reduce impacts to a minimal or zero level.
16. Logging and related development can harm wildlife habitat. Management protection will exist, but deer populations could be reduced in some areas.
17. Logging and related development will bring visual changes to some areas, even though Landscape Architects are helping to minimize these impacts.
18. Permanent Forest Service families would live in Hoonah. Programs such as the YACC, the Youth Conservation Corps, recreation projects, fisheries and wildlife projects, and other activities would be managed from the permanent road system. These activities could continue after logging is finished.
19. One way to avoid sudden and major change in Hoonah is to spread logging operations over ten years, rather than concentrating the development during five years. Fewer new residents and jobs would result--but economic benefits would be extended and social impacts reduced. What are your comments?
20. Note other concerns you have about the proposals.

PLEASE LOOK AT THE MAPS WHICH SHOW PROPOSED ROADS, LOG DUMP AND STORAGE AREA, AND ALTERNATIVE LOCATIONS FOR THE LOGGING CAMP. PLEASE PROVIDE YOUR THOUGHTS, INCLUDING:

- How proposals affect the way you now use the land around Hoonah.
- Any suggestions you have to improve the proposed location of these developments.

USDI Fish and Wildlife Assessment of Log Transfer Facilities



United States Department of the Interior

FISH AND WILDLIFE SERVICE
P.O. Box 1108
Petersburg, Alaska 99833

July 16, 1979

John F. Buttrille
Forest Supervisor
U.S. Forest Service
P.O. Box 309
Petersburg, Alaska 99833

ATTENTION: Dave Reimer, IOT Coordinator, ALP
1981-1986 Planning East Kuiu Island.

Dear Mr. Buttrille:

During March 1979, Dave Reimer of your staff requested that a coordinated evaluation be conducted regarding several proposed log transfer sites located in No Name Bay and Port Caden, Kuiu Island. On June 23, 1979 a meeting was held in Juneau with representatives of the Environmental Assessment Division, NMFS, Juneau, the Habitat Protection Division, ADFG, Juneau, and the Division of Ecological Services, & USFWS, Petersburg, to discuss and make recommendations regarding the proposed log transfer sites. Prior coordination regarding the sites can be found in various dive reports prepared by NMFS and USFWS. This report has been reviewed by representatives of the NMFS and ADFG, and they are in concurrence with this planning aid report.

The proposed log transfer sites which are located in No Name Bay and Port Caden were investigated during August 1977 and April 1979 by the USFWS, and during June 1978 by the NMFS. More recently, the proposed sites were again investigated during June 1979.

The subtidal area observed at Port Caden and the inner part of No Name Bay are very similar. The bottom substrates observed at both sites consisted of fine sediments overlain with a layer of detritus. In general, this detritus consists of coarser to macroscopic organic-inorganic complexes which often remain in suspension as aggregates and flaky particles.

This soup-like mixture is important because it contains a source of nutrients, vitamins, trace elements, organic fragments, organic colloids, and various portions of silt, fine sand and living microflora. The mixture remains in suspension primarily because it has a specific gravity similar to the water in which it is contained. This type of sediment and suspended mixture of detritus is indicative of areas which have feeble bottom currents. This biotope or subarea is often found at the upper end of bays and/or coves and is formed through gradual climatological and geological processes. Much of the detritus is derived from plants found within the stream/forest ecotone and the stream/estuary ecotone which is funneled into the bay and mixes with the plants produced (e.g. algae-beach sedges) in the subtidal and intertidal zones. Such areas of detrital sinks are primarily sources of energy in the detrital food chain, which in an abbreviated example contain the life-sustaining elements which permit plants to animal to plant functions.

One unquantified but possible degrading factor which should be considered in the establishment of a site in shallow areas which exhibit feeble water circulation is that after several years of bark debris accumulation, a turn over could occur. Tidal circulation would be such that a large mass of the accumulated bark would be turned up and scattered through the more restricted shallow areas of the bay. This event would tax dissolved oxygen and release hydrogen sulfide. The possible ramifications of such an abrupt change in water quality could be the death of the early life stages of crustaceans, mollusks, fish and so forth.

In comparison to the above mentioned areas, the proposed log transfer site (site 3) located on the eastern point of a small cove at the mouth of No Name Bay is located in deeper water. The use of this area to transfer logs will increase the chance for bark debris dispersion into a large volume of water. We believe that it is more environmentally acceptable to facilitate the dispersal of bark debris rather than confine such debris to the heads of bays and coves which, from our standpoint, lack adequate water circulation, are shallow and function as naturally occurring detrital or nutrient sinks.

We believe that the proposed Port Caden log transfer site is not acceptable because of the above mentioned reasons. Also, that in general, Port Caden is a highly productive area which, as has been stressed at various meetings, supports a highly valuable mixed fishery resource. It is also our understanding that during a task force meeting held in September 1978 between representatives of Alaska Lumber and Pulp, USFS, ADFG, NMFS, and USFS, that the rationale for constructing a log transfer site at Port Caden was to facilitate the shipment of pulp mill type logs to Sitka. Due to the fact that the Rowan Bay site is a permanent site, and that logs could be transported to Rowan Bay via the Port Caden - Bay of Pillars isthmus road, we foresee no need for a log transfer facility at Port Caden.

In regards to the No Name Bay sites, we believe that site 3 located at the south of the bay is a more acceptable log transfer location, rather than the inner bay site, and that this site should be used. Monitoring procedures and the means by which bark debris introduction could be minimized at this location was left open for future discussions.

We have enclosed 400 recording data, dive reports, intertidal collection reports, and eagle nest tree locations for your use.

If we can be of any further assistance in your planning efforts, please notify us.

Yours truly,

Marcus Horton
Marcus Horton
Project Leader

cc: NMFS, ADFG
USFWS, SEES, Jnu



United States Department of the Interior

FISH AND WILDLIFE SERVICE
P.O. Box 810
Sitka, Alaska 99835

July 12, 1979

Ken Thompson, Fishery Biologist
U.S. Forest Service
Box 1980
Sitka, Alaska 99835

Re: Log Transfer Facilities

Dear Ken:

This letter will serve to summarize our agency's concerns as discussed at the July 6, 1979 meeting with Forest Service, NMFS, and ALP representatives regarding review of proposed and current permits for log transfer facilities (LTF) and storage areas in the Chatham Area.

Log Transfer Sites

Currently proposed LTF sites at Finger Creek (Hoonah Sound), Seal Creek, (Freshwater Bay), Salt Lake Bay (Port Frederick) and Inbetween (Tenakee Inlet) will have fewer adverse impacts to fish & wildlife values than other alternatives being considered. Refer to our individual site report for more detailed information and recommendations. We still have concern regarding resource conflicts at the following areas:

Hoonah-Whitestone. Proposed LTF sites at Whitestone Harbor are in conflict with continued use of the area as a popular boat anchorage for recreational and commercial fisheries. The only other viable alternative being considered is in "The Fingers" near Hoonah. The cove is not physically well suited for use as a LTF. "The Fingers" is very shallow and protected and will not be able to naturally flush itself of debris generated from the large volumes of timber planned to go thru this LTF. We anticipate considerable and long lasting degradation of marine life within the cove. However, as a participant in the IDT investigations, we realize that the options are limited and recommend that "The Fingers" site should be selected over Whitestone Harbor unless another site with fewer adverse impacts is located. We recommend that the USFS consider some type of mitigative measures to prevent or remove accumulations of debris from this site. The LTF should be sited as far out on the point as possible so that bark and other debris will be dispersed from the inner cove.

Trap Bay. USFS and FWS investigations are ongoing and final recommendations remain to be worked out. The bedrock reef site located east of the stream will probably be unacceptable to our agency. Other alternative LTF sites must be investigated in Trap Bay.

Review of Current Log Storage Areas

Although we would like to see the number of log storage areas kept to a minimum, the only area currently permitted that we have serious concerns about is the Fish Bay intertidal storage area. We believe that intertidal storage of logs should be eventually phased out because of adverse impacts to fish and wildlife values. We recommend that your agency initiate an ad hoc committee to investigate alternatives to the intertidal storage area in Fish Bay. We would be willing to participate and/or provide advice on any subsequent investigations.

We appreciate the opportunity to comment on these timber harvest plans.

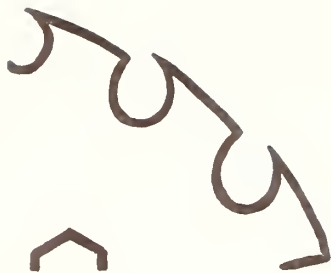
Sincerely yours,

Bill Hughes
William A. Hughes
Biologist

cc: NMFS, ADFG, Jnu
Perenovich, Niles &
Bird, USFS, Sitka
SEES, Jnu



Save Energy and You Serve America!



Glossary

AERIAL HARVEST SYSTEMS

Examples are helicopter logging, balloon logging with cable, and suspended cable such as skylines.

AGE CLASS DIVERSITY

The amount of age class distribution within a stand. Stands with low age class diversity would be composed of trees approximately the same age. Stands with high age class diversity would contain trees of many ages.

ALEVINS

Newly hatched salmon still attached to the yolk sac.

ALGAL

Of, pertaining to, or composed of algae.

ALLOCATION

Commitment of a given area of land to one or more kinds of management, along with related manpower and capital requirements, to provide the public with differing land use opportunities. Allocation constraints limit the consideration of a given land to less than the full set of land management options that are basically suitable for application thereon.

ALLUVIAL

Deep, highly productive soils in valley bottoms, resulting from transportation and deposition from higher slopes by running water.

ALPINE

(See Landtypes)

AMBIENT

Surrounding; on all sides; condition or situation surrounding a point or object on all sides.

ANADROMOUS FISH

Those species of fish which mature in the sea, and migrate into streams to spawn. Salmon, steelhead, and shad are examples.

AQUACULTURE

The artificial rearing of aquatic organisms, normally requiring some type of facility and developed program or schedule of activities.

ARTERIAL ROADS

Mainline, primary roads.

ATTITUDE

The relation of some directional feature in a rock to a horizontal plane.

BACKCOUNTRY

Any area where the management objectives stress dispersed off-road recreation activities such as hiking, hunting and fishing.

BENTHIC

Relating to, or occurring in the organisms dwelling at the bottom of a body of water.

BEST MANAGEMENT PRACTICES (BMP's)

Prescription outlined in the Project Guidelines developed for suggesting preferred management practices. They are designed to meet commitments and mandates outlined in Forest Regulations.

BIOMASS

The total quantity (at a given time) of living organisms of one or more species per unit of space.

BOREAL FOREST

Forests occurring in northern, mountainous regions. A blanket term for all forest types occurring within southeast Alaska.

BORROW SITE

The place from which material is taken for road fill, camp pads, log transfer site fills, etc. Borrow sites may be comprised of alluvial materials or may be excavated from shot rock.

CANT

A log partly or wholly cut and destined for further processing.

CAPABILITY-

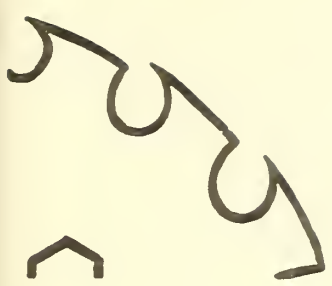
An evaluation of a resource's inherent, natural or intrinsic potential for utilization. (see Suitability).

cfs/cfsm

Cubic feet per second/cubic feet per second per square mile. Terminology used in determining and measuring streamflow velocities.

CLEARCUT

A silvicultural system in which all marketable trees cut over a considerable area at one time. They are commonly used in even-aged stands, and are rarely to exceed 160 acres.



CLIMAX FOREST

A forest in which the species are no longer subject to change. For example, a coniferous forest has reached climax when the predominant species is reproducing itself without significant competition from other species.

COLLECTOR ROADS

Main branches off mainline roads that penetrate valleys.

COMMERCIAL FISHERY

The taking, fishing for, or possession of fish, shellfish, or other fishery resources for profitable purposes.

COMPATIBLE USE

Land use that can exist together so that no one use improves or detracts from the quality of another. In practice, this definition is usually relaxed to include uses that can coexist while conflicting only slightly.

CORE IDT

See Interdisciplinary Team

CRITICAL

See Soils

CRITICAL DEER RANGE

The primary accessible habitat of food and shelter for the winter survival of deer.

CRITICAL FOREGROUND

Foreground in which esthetic values are an important part of the environment, and other significant opportunities are present for existing, anticipated, or planned use and enjoyment by people visiting or travelling through the area.

CROWN CLOSURE

Overstory that provides little, if any, openings within the forest canopy.

CRUISE

To estimate and evaluate the volume and quality of a timber stand by visual examination of test spots and strips in the stand. A cruiser usually examines from 10 to 20 percent of a total stand.

CUTOVER

Areas of recent harvest.

DEFERRED

see Forest Land Classes.

DESIRED LEVEL

The number of fish and wildlife of any species desired to meet management objectives for those species as determined by the responsible management agencies.

DETRITAL

Of, pertaining to, or composed of minerals occurring in sediment.

DISPERSED RECREATION

Recreation of various kinds that occur generally throughout a large area, and is not confined to a specific place. Further categories of Dispersed Primitive Recreation and Dispersed Semiprimitive Recreation deal with specific site types.

DRAFT ENVIRONMENTAL IMPACT STATEMENT

The version of the statement of environmental effects required for major Federal Action under Section 102 of the National Environmental Policy Act (NEPA), and released to the public and other agencies for comment and review.

DUFF

A layer of loose, partly decomposed vegetative matter on a forest floor.

EASEMENT

An interest in the land of another which allows the easement holder specified uses or rights without actual ownership of the land.

ESCAPEMENT

The number of adult fish returning to their spawning stream.

ESTUARINE HABITAT MANAGEMENT UNIT (EHMU)

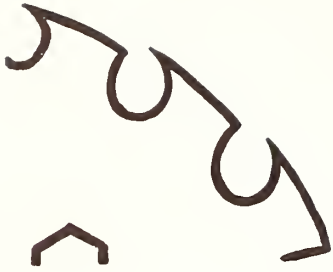
The area around an estuary and closely associated with the estuarine ecosystem, having major fish or wildlife values.

ESTUARINE HABITAT SENSITIVITY ZONE (FHSZ)

That portion of the estuarine habitat management unit most sensitive to disturbance and generally requiring special management prescriptions.

ESTUARY

All or part of the mouth of a river or stream having unimpaired natural connection with open saltwater and within which the seawater is



measurably diluted with freshwater. In Alaska, estuaries tend to form bays, and include the adjacent grass or mud flats present below mean higher high tide, known commonly as the Estuarine.

EVAPOTRANSPIRATION

That portion of the precipitation returned to the air through direct evaporation or by transpiration of vegetation, with no attempt made to distinguish between the two.

EXCLUSIVE USE

The permitted occupancy of a specified area of the National Forest by an individual or group which limits or excludes use of that area by the general public or other permittees.

FEASIBILITY

The opportunity for economical harvest and transportation of timber.

FISH HABITAT

The aquatic environment and the immediately surrounding terrestrial environment that, combined, afford the necessary physical and biological support systems required by fish species during various life history stages.

FISH HABITAT MANAGEMENT UNIT

An area of stream and associated bankside habitat identified during IDT processes as having fish values of such major importance that the habitat within the management area designated by the IDT is managed with fish as the primary resource value.

FISH HABITAT SENSITIVITY ZONE (FHSZ)

That portion of the fish habitat management unit most sensitive to disturbance and generally requiring special management prescriptions.

FORB

A palatable, broad-leaved plant, nongrass-like, having little or no woody material in it.

FOREST LAND CLASSES

Deferred - productive forest lands withdrawn from cutting until further classification has been determined, i.e. areas of potential resource protection.

Reserved - productive forest lands withdrawn from cutting by statute, administrative regulation, or by designation into land use approved by the Regional Forester.

Unregulated - areas that are not organized for timber production, and are potentially allocations to numerous other management activities.

Non-Forest Lands - Land with less than 10 percent cover of commercial tree species.

Non-Commercial Forest Lands - Land with more than 10 percent cover of commercial tree species but not qualifying as Commercial Forest Land. Commercial Forest Land which is producing or is capable of producing crops of industrial wood. This includes areas suitable for management and capable of producing in excess of 20 cubic feet per acre of annual growth. All Commercial Forest lands are subdivided into the following components:

- a. Standard - the component of the commercial forest land on which timber can be logged with adequate protection of all forest resources under the usual provisions of a timber sale contract.
- b. Special - the component of the commercial forest land recognized as needing specially designed treatment of the timber resource to achieve landscape or other key resource objectives.

FRY

Recently hatched fish.

HABITAT IMPROVEMENT

Improvement of Habitat that sustains or enhances production of fish or wildlife. Examples are fishways past obstacles, debris removal in streams, seeding on roadsides, or creating openings for deer habitat.

HAZARD-

See Soils.

HIGH LEAD CABLE LOGGING

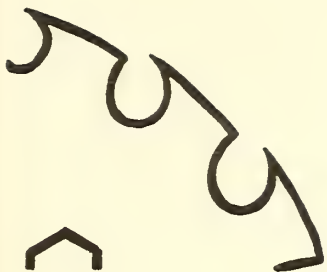
A method for transporting logs from the stumps to a collecting point by using a powered cable, passing through a block fastened high off the ground, to lift the front ends clear while dragging them.

INFAUNA

The organisms living below the water-bottom interface, such as many marine worms, clams, and other invertebrates.

INOPERABLE TIMBER

Timber which cannot be harvested because of potential resource damages, economic unfeasibility,



or physical limitations and inaccessibility.

INTERDISCIPLINARY TEAM (IDT)

A group of individuals with different training backgrounds assembled to solve a problem or perform a task. The team is assembled out of recognition that no one scientific discipline is sufficiently broad enough to adequately solve a problem. The Core IDT is the control planning subunit within the IDT.

INVENTORY VOLUME

Volume of commercial timber actually on the ground, usually presented as board feet or cubic feet per acre.

LAND FORM

Land form is used for surface features whose origins can be attributed to particular geological processes or particular structures.

LANDSCAPE CHARACTER TYPES

See Visual Character Types.

LANDSCAPE VARIETY CLASSES-

Reflect natural scenic qualities. Distinctive landscape variety ratings are generally applied to those areas with outstanding or unusual visual quality. Conversely, landscapes with little diversity in landform, vegetative patterns, waterforms, or rock formations are given lower variety class ratings.

LANDTYPE

Visually identifiable unit areas of similar land form and climatic processes having defined patterns of soils and vegetative potentials. They can range in size from about 1/10 to 1 square mile. Among character types within which specific landtypes occur are:

Alpine - The higher regions of mountain systems, strictly defined as the regions between timber lines and permanent snow lines.

Muskeg - A marshy area similar to a bog, with insufficient drainage and a considerable depth of moss.

Valley Bottoms and Lowlands - Relatively flat land or rolling foothills at lower elevations, including valley side slopes less than 40 percent.

Valley Walls - Continuous sideslopes generally exceeding 40 percent.

V-Notches - Narrow, steep sided ravines or valley watersheds with V-shaped cross sections whose bottom usually contains a watercourse

often recognized as a sign of geological weakness or post-glacial channeling.

Wetlands - The areas lying between the elevation of extreme low spring tide and the tree line.

LAND USE DESIGNATIONS (LUD)

Land use designations are a method of classifying or zoning lands according to a combination of various uses and use intensities. Uses or activities are grouped together so they define, together with a set of coordinating policies, a combination of activities which are essentially compatible.

LUD I - All areas allocated to LUD I will be either recommended for wilderness designation or will be studied for such a designation. LUD I is usually applied to undeveloped lands which provide opportunities for solitude and primitive types of recreation and contain unaltered habitats for plant and animal species. If an area allocated to LUD I is added to the National Wilderness Preservation System by Congress, certain management implications would apply.

LUD II - This designation provides greater management flexibility than LUD I while still retaining the primitive wildland environment. Primitive recreational facilities can be built, and habitat improvements for fish and wildlife are also permitted.

LUD III - LUD III areas are managed to provide a combination of both amenity and commodity values. The goal is to achieve compatibility among competing resource uses within the same area.

LUD IV - In LUD IV the goal is to provide opportunities for intensive development of resources. Emphasis is primarily on commodity, or market, resources and their use. Amenity values are also provided for. When conflicts over competing resource uses arise, however, these conflicts would most often be resolved in favor of the commodity values than would be the case in LUD III.

LEACHATES

Matter removed from a substance by percolating.

LIFESTYLE-

A characteristic way of living which may be an individual variant within the cultural mainstream or may be an individual expression of a subculture.

LINE OFFICER-

Chief or Regional Forester or Forest Supervisor.



LITTORAL-

Belonging to the shore of a large body of water.

LOG TRANSFER SITE (L.T.S.)-

Location at which logs are transferred from land to water in preparation for making rafts for storage or towing to the mill, i.e. log dump.

LONG-TERM PUBLIC INTEREST-

A subjective judgement that must balance the collective needs and benefits of the general public against the needs and benefits of individuals or special interest groups over the foreseeable future. This judgement involves consideration of environmental values for specific locations and uses, economic feasibility, and evaluation of social and economic needs.

MANAGEMENT ACTIVITY

An action taking place on-the-ground as a result of a management decision. Examples are clearing debris, timber harvests, planting trees, and fish ladder construction.

MANAGEMENT AREA

Subunits of forest administrative areas are called specific management areas. Management areas are made up of the smaller Value Comparison Unit (VCU's) which have similar Land Use Designation (LUD), resource, and physical allocations, and where specific activities will all be included in the same prescriptive management plan.

MANAGEMENT OBJECTIVE

The policy setting the kind of management to be done on a Management Area.

MANAGEMENT PRESCRIPTIONS

Specifically sets forth policies and standards under which Management Objectives will be carried out. Commonly consists of a comprehensive statement in words, maps, illustrations and other media explaining the means in which objectives can be carried out in pertinent management areas.

MARGINAL

See Forest Land Classes.

MAXIMUM MODIFICATION

See Visual Quality Objectives.

MEAN ANNUAL INCREMENT

The total volume of a stand of trees divided by the age of the stand.

MINERAL DEFINITIONS

Critical Material - Material that is vital to the national defense, the main source of which is within the continental limits of the United States, and which may not be produced in quality and in quantity sufficient to meet requirements.

Critical Minerals - Minerals essential to national defense, the procurement of which in war, while difficult, are less serious than those of strategic minerals because they can be either domestically produced or obtained in more adequate quantities or are less essential, but for which some degree of conservation and distribution control is necessary.

Essential Minerals - A mineral essential to national defense for which no great difficulty of procurement during war is anticipated, but which requires constant surveillance because future developments may necessitate reclassification as strategic or critical.

Strategic Minerals - Minerals essential to the national defense for the supply of which, during war, we are wholly or in part dependant upon sources outside the continental limits of the United States, and for which strict measures controlling conservation and distribution are necessary.

MMbm

One million board measures.

MODIFICATION

See Visual Objectives.

MORPHOLOGY

The observation and study of the forms and structures of land and organisms.

MULTIPLE ENTRY

Entering an area more than once during a given rotation period for the purpose of harvesting timber.

NICHE

A site or habitat supplying the factors necessary for the successful existence of a species.

NON-POINT SOURCE POLLUTION

Pollution whose source is general rather than specific in location. Logging operations,



production of sediments, and automobile exhaust are examples of this form of pollution.

NON-PRODUCTIVE
See Soils.

NON-STANDARD HARVEST OPERABILITY
Timber which cannot be harvested with standard equipment and techniques, but would require other systems including balloon or helicopter and skyline over 2600 feet.

NORMAL HARVEST OPERABILITY
Timber which can be harvested with standard equipment and predominant techniques not in use. These include highlead, A-frame, skyline less than 2600 feet, and tractor.

NURSERY AREA
The fresh or saltwater areas used by fish or shellfish during their juvenile life stages.

OLD-GROWTH SAWTIMBER
CFL stands more than 10 percent stocked where the plurality of stocking is in Sawtimber trees (11 inches or larger) more than 150 years old.

OPERABILITY
Timber suitable for harvest with the capability of being harvested and transported to a market. See Inoperable, Non-standard, and Normal Harvest Operability.

OVERSTORY
That portion of trees in a forest with more than one roughly horizontal layer of foliage forming the upper layers.

PARTIAL CUTTING
All methods of tree removal which result in taking only part of a stand.

PATCH CUTTING
A modification of the clearcutting system developed in the Pacific Coast region of N. America whereby patches of 40 to 200 acres are logged as single settings, separated for as long as practicable (preferably until the regeneration is adequately shading the forest floor) by living forests.

PARTIAL RETENTION
see Visual Quality Objectives.

PH
A measure of the hydrogen-ion activity in solutions, expressed on a scale of 0 (highly acid) to 14 (highly basic); 7 pH is a neutral solution, neither acid nor basic.

PLANKTON
Floating or drifting life within a body of water.

P-Line
A preliminary survey line.

POLETIMBER
CFL stands at least 10 percent stocked with growing stock trees of which a higher plurality are between 5.0 and 10.9 inches in diameter. Also refers to the individual trees within such stands.

POTENTIAL YIELD
The potential yield for the next ten years is the maximum harvest that could be planned to achieve the optimum perpetual sustained-yield harvesting level attainable with intensive forestry on regulated areas considering the productivity of the land, conventional logging technology, standard cultural treatments and interrelationships with other resource uses and the environment.

PRESCRIPTION
See Management Prescription.

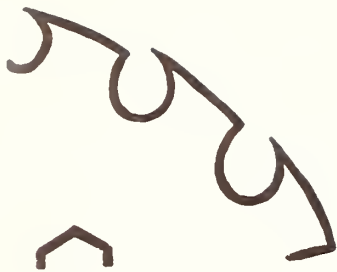
PRESERVATION
See Visual Quality Objectives.

PRODUCTIVE
See Soils.

PROJECT PLAN
The level of planning dealing with actual physical impacts on the land, usually the last planning level before resources are cut or dug, roads are built, or any other significant action takes place.

PURSE SEINING
Fishing method involving large, basket-like nets.

RARE II
(Roadless Area Review and Evaluation). Environmental survey of roadless areas as a means of gaining alternative approaches for deciding use of undeveloped areas.



RECONNAISSANCE

A preliminary survey usually executed rapidly and at a relatively low cost.

RENEWABLE RESOURCE

Any resource, such as timber or fish, that is not depleted through use and that can be managed so that the use of present supplies does not diminish future flows.

RETENTION

see Visual Quality Objectives.

RETENTION FACTOR

The amount of commercial forest land removed from the timber base to protect other resource values. These factors are allowances available to draw upon when meeting other resource needs and are not fixed policies to be rigidly applied by the IDT or Forest Supervisors.

RIFFLES

A shallow extending across the bed of a stream commonly having minor rapids.

RIPARIAN

Pertaining to the banks of a body of water.

ROTATION

The planned number of years (approx. 100 years in Alaska) between the formation of regeneration of a stand and its final cutting at a specified stage of maturity.

SALMONIDS

All members of the family Salmonidae, including salmon, trouts, and char.

SALVAGE CUTTING

Cutting primarily to utilize dead and down material and scattered poor risk trees that will not be marketable if left in the stand until the next scheduled harvest.

SAWTIMBER

Trees considered suitable in size (11 inches diameter, and larger) and quality for producing sawn timber

SCALE VOLUME

The volume of timber, reported in board feet or cubic feet, as measured by a mensuration formula, usually at the mill.

SCENIC QUALITY

The esthetic pleasure associated with the visual characteristics of the landscape.

SEEDLING OR SAPLINGS

CFL stands at least 10 percent stocked with growing-stock trees and with 51 percent of stocking in seedlings and/or saplings less than five inches in diameter.

SEED TREE SYSTEM

Logging system which leaves selected trees standing within cutting areas to provide seed for natural regeneration of the timbered area.

SELECTION CUTTING

An uneven-aged silvicultural management system in which trees are removed individually from a large area each year. Uneven-aged stand composition is established and maintained by intermittent cutting.

SESSILE

Applied to animals and organisms that are closely attached to other objects without any inherent support systems of their own.

SHELTERWOOD CUTTING

An even-aged silvicultural system in which the mature crop is removed in two or more successive cuttings.

SILVICULTURE

Generally, the science and art of cultivating (i.e. growing and tending) forest crops. More particularly, it is the theory and practice of controlling the establishment, composition, constitution, and growth of forests.

SITE INDEX CLASS

A numerical evaluation of timber growing productivity potential based on capability of the soil and other characteristics of the site. Three levels are used: high, medium, and low.

SLOPE CLASS

The steepness of the ground measured by percent.

SLASH

Debris left over after a logging operation, i.e. limbs, bark, broken pieces of logs.



SOILS

Soils have been evaluated and classified into categories in relationship to their inherent qualities and defects and suitability for developmental activities.

Critical - A soil type whose physical properties cause it to be inherently unstable.

Hazard - Soil on excessively steep slopes (usually 37 degrees or more) subject to sliding; or soil in sharp V-notches.

Non-Productive - Poorly drained soils represented by muskeg and scrub combinations.

Productive - Soil sufficiently deep and well-drained to produce significant growth rates in vegetation. In southeast Alaska, this soil is capable of producing timber growth rates of 20 cubic feet or more annually.

SPAWNING AREA

The available area within the confines of a streamcourse which is suitable for the deposition and incubation of salmon or trout eggs.

SPECIES DIVERSITY

The number of different species occurring in a location or under a similar condition.

SPECIAL

see Forest Land Classes.

SPECIAL USE PERMIT

A permit that authorizes the permittee to engage in specified activities or erect specified structures at designated locations on the National Forest.

STANDARD

see Forest Land Classes.

STAND CUTTING

A clearcutting system variation in which the logging operation removes all marketable timber from areas that are large enough to be practical for future management as uniform even-aged stands.

STRIP CUTTING

A clearcutting system variation in which the logging operation removes all marketable timber from areas that are large enough to be practical for future management as uniform even-aged stands.

STUDY AREA

An area of land that has been designated for an

evaluation of its resources, productive capability, and existing or potential uses.

STUMPAGE

The value of timber as it stands in terms of an amount per board foot.

SUBSISTENCE

The derivation of part or all of one's livelihood from the surrounding environment without monetary exchange. Examples include inclusion of fish in basic summer diet, and deer as a winter staple.

SUCCESSFUL STAGE

One stage in a series of changes affecting the development of a biotic community. On its path to a climax stage of arrested development, the community will pass through several stages of adaptation to environmental changes (e.g. Mineral soil-primary succession; disturbed land-secondary succession stages).

SUITABILITY

An evaluation based upon a resource's potential utilization within proposed management activities.

THIXOTROPY

The property of changing from gel to fluid when disturbed. The process is reversible, and characteristic of southeast Alaska soils.

THOUSAND-FOOT BOARD MEASURE

A method of timber measurement in which the unit is 1000 super feet of 1-inch thickness, i.e. 1000 bd. ft. shown as M bd.ft., M b.m., MBF.

TONGASS LAND MANAGEMENT PLAN (TLMP)

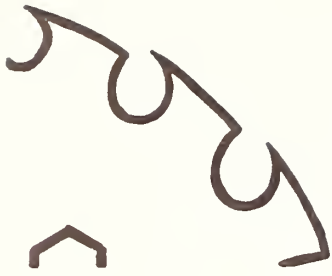
The land allocation plan for the Tongass National Forest which serves to direct and coordinate further planning on the Forest as well as the uses and activities carried on within the Forest on a day-to-day basis. TLMP provides management direction for a period of ten years.

TOPOGRAPHY

The configuration of the land surface including the relief and position of natural and human-made features.

TRANSPORTATION CORRIDOR

A general route that fits the physiography of land and water and that offers opportunities for the movement or transmission of people,



goods, fuel or energy from one point to another. Travel Corridor is the specific term for main routes of transportation (highways, boat travel routes) within an area.

TRANSPORTATION SYSTEM

All existing and planned roads, trails, bridges, airfields, and other transportation facilities or routes.

UNACCEPTABLE MODIFICATION

See Visual Quality Objectives.

UNDERSTORY

The small trees and other woody species growing under a more or less continuous cover of branches and foliage formed collectively by the upper portions of adjacent trees and other woody growth (overstory).

UNREGULATED

See Forest Land Classes.

VALLEY BOTTOMS AND LOWLANDS

see Landtypes.

VALLEY WALLS

see Landtypes.

VALUE COMPARISON UNIT (VCU)

A distinct geographic area that generally encompasses a drainage basin containing one or more large stream systems. Boundaries usually follow easily recognizable watershed divides. These units were established to provide a common set of areas for which resource inventories could be conducted and resource value interpretations made.

VIEWER SENSITIVITY LEVELS

Are determined for land areas viewed by those who are travelling through the forest by air, waterways, roads, and trails; are using facilities such as campgrounds, visitor centers, public cabins, picnic grounds, winter sports areas, and resorts; or are otherwise concentrating use and recreation at lakes, streams, and other water bodies. High sensitivity levels are associated with areas of national importance and high public use, e.g. ferry routes, tour ship routes, high volume recreational waterways, anchorages, camping areas, and permanent communities. Lower sensitivity levels are identified with areas lacking national prominence or receiving limited use by recreationists.

VISITOR DAY

The visitation provided by one or more persons for a period of 12 to 24 hours, either continuous or spread over several visits.

VISUAL CHARACTER TYPES

An area of land that has common distinguishing visual characteristics of landform, water forms, and vegetation patterns. Used as a frame of reference to rate physical features of an area as to their degree of scenic quality.

VISUAL QUALITY OBJECTIVES

A set of measurable goals for management of forest visual resources. 'Recommended' VQOs are based upon an evaluation of viewer sensitivity levels and landscape variety classifications and describe the different degrees of acceptable alteration of the landscape before trade-offs with other resources may be involved. 'Adopted' VQOs are the final Visual Quality Objectives describing the visual resource for the land management alternative that has been selected and approved. They are statements of management direction. These objectives are a "contract" between the land manager and the public until the land management plan is next amended or revised. Visual Quality Objectives consist of the following classifications:

Preservation: Management activities, except for low visual-impact recreation facilities, are prohibited. Allows only ecological changes.

Retention: Management activities must not be visually evident as seen from viewing positions.

Partial Retention: Management activities can be visible but must be visually subordinate to the characteristic natural landscape.

Modification: Management activities may visually dominate original landscape characteristics. However, visual characteristics of management activity must borrow from those of natural occurrences within the surrounding area.

Maximum Modification: Management activities may dominate the natural landscape. When viewed from foreground or middleground viewing positions, they may not borrow from the natural landscape. But, when viewed from background positions, the activity must have the visual characteristics of the natural landscape. All foreground and middleground alterations must be designed to reduce undue contrast within five years.

Unacceptable Modification: Management activities which do not meet Visual Quality Objectives.



Overall extent of management activity is excessive. Size of activity is poorly related to the scale of landform and vegetative patterns in the characteristic landscape. These activities should not be permitted regardless of distance zones.

V-NOTCH

See Landtypes.

VOLUME CLASS

Average stand volume based on standing net board feet per acre, by Scribner Rule.

WETLAND

See Landtypes

WHIP REMOVAL

The removal of all trees left standing after logging to prevent the spread of dwarf mistletoe.

WILDERNESS

Any large tract of land uncultivated and uninhabited by human beings, where the earth and its biotic community is untrammelled by humans, where humans are the visitors who do not remain.

WILDLIFE HABITAT

The locality where the species may generally be found and where all essentials for its development and existence are present.

WILDLIFE HABITAT MANAGEMENT UNIT (WHMU)-

An area of wildlife habitat identified during the IDT process as having wildlife values of such importance that the habitat within the management area designated by the IDT is managed with wildlife as the primary resource value.

WINDTHROWS

Areas or particular trees uprooted by wind velocity.

YOUNG-GROWTH SAWTIMBER

CFL stands at least 10 percent stocked with growing stock trees with more than 51 percent in sawtimber (11 inches or larger) less than 150 years old.

* In this glossary, some of the entries may not be found in this document. They were included because they are used in some of the specialists' reports which some readers may wish to review. These working reports are available for review at Forest Service offices in Petersburg and Sitka, Alaska.



Sources Cited

For the ease and convenience of the reviewer, national direction for the preparation of environmental assessments is to make supporting materials available to the reader upon request. Therefore, this document attempts only to highlight key information gathered by resource specialists.

Detailed reports and working maps are available from the Chatham and Stikine Forest Service Offices. This information includes both material prepared by the 1981-86 IDT and documents prepared during earlier planning studies which remains relevant to this environmental assessment.

Interested individuals are encouraged to contact the agency to obtain further information. In some cases this material can be provided by mail. In other instances, it will be necessary for the review to visit the Forest Service office to examine data.

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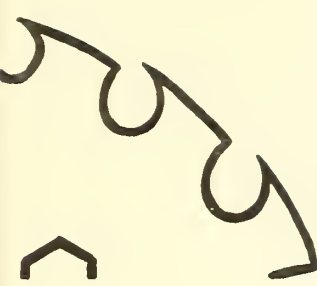
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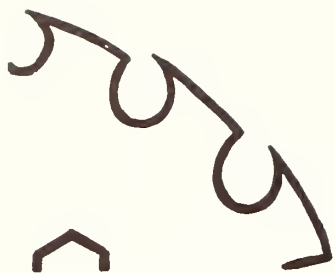
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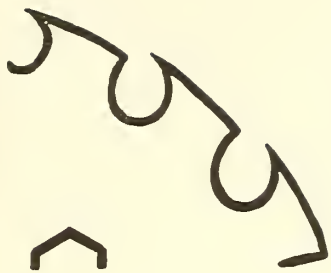
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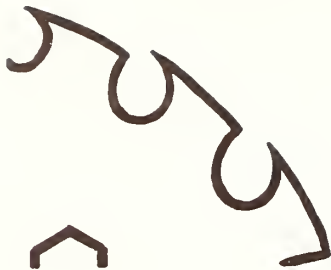
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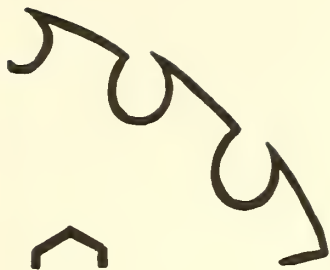
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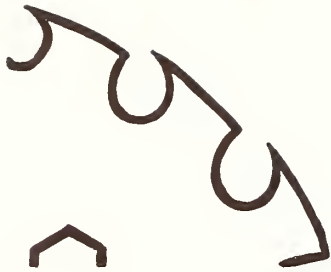
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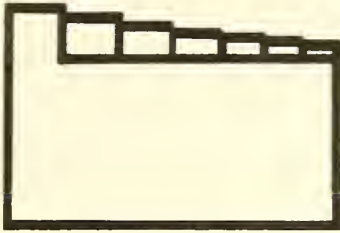
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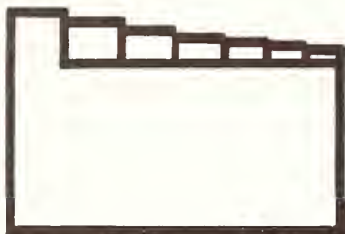
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